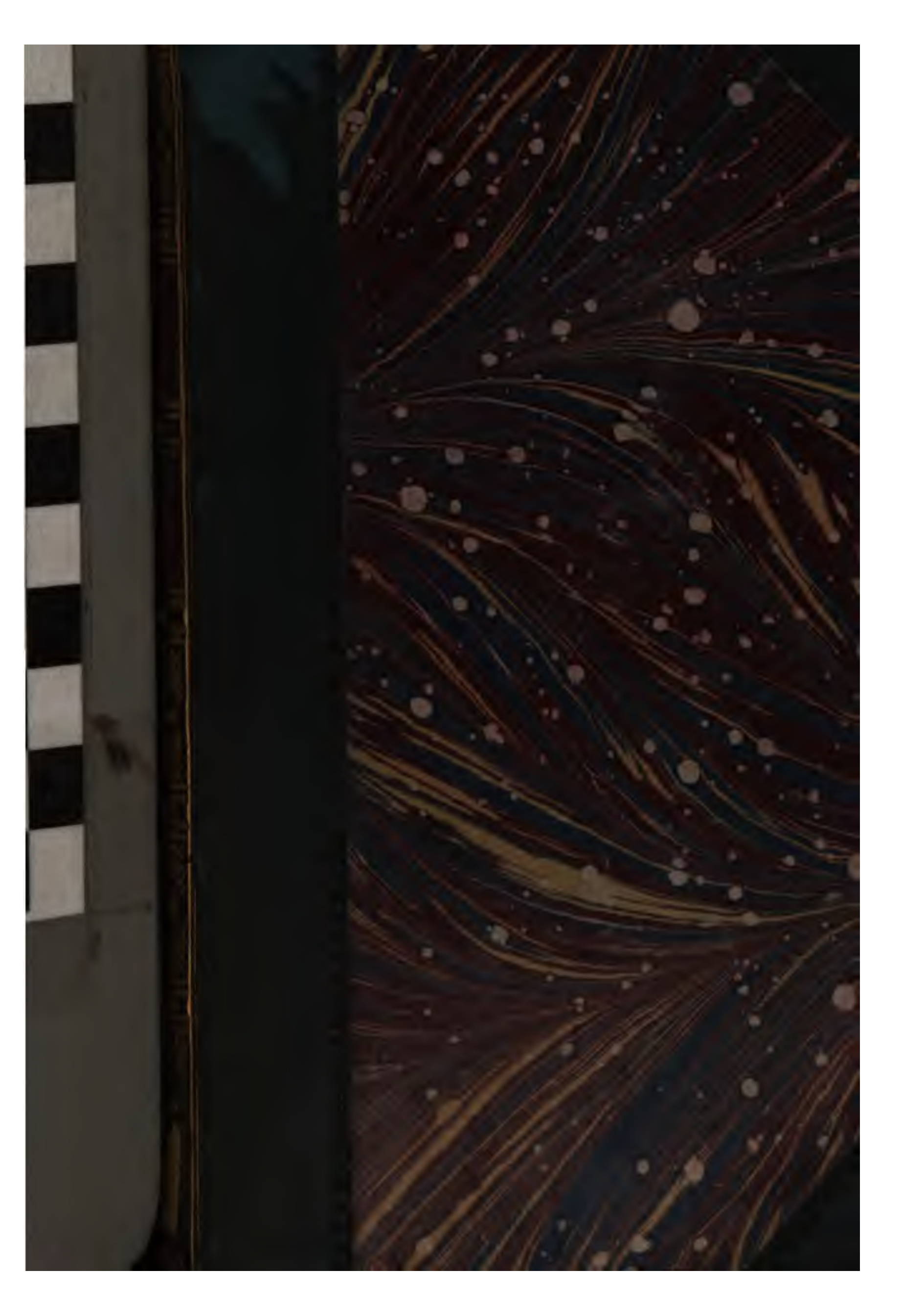
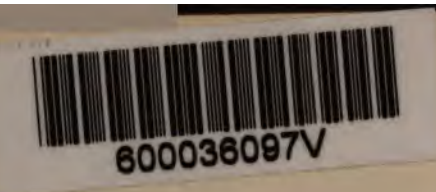



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VOL. XXV.

MAMMALIA.

AMPHIBIOUS CARNIVORA.

BY ROBERT HAMILTON, ESQ., M.D.,

F.R.S.E., M.W.S., ETC.



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In all Thirty-three Plates in this Volume.

MEMOIR

OF

M. FRANCOIS PERON.

MEMOIR

OF

M. FRANCOIS PERON.

Memoir of M. Peron, Correspondent de l'Institute, Membre de la Societé de Medicine, &c. &c.

In the following Memoir, we invite attention to a brief sketch of the eventful life of the illustrious Peron, whose course was alike short and brilliant. In early life, disabled from further service in that bloody field, misnamed the field of glory, for which by nature he was peculiarly fitted, but where he witnessed much that almost broke his heart, he betook himself to the study of Natural History, and, after a period of ardent application, he spent several most busy years in the dreary regions of the Antarctic Seas—there working as Naturalist had never worked before. He then returned to Paris, loaded with the spoils of his successful industry

and skill, and when the first fruits were just beginning to give promise of a most glorious harvest, he was himself cut down in early spring, as is feelingly expressed in our interesting portrait, which, with its motto, may prove a homily to every heart:—Il s'est desséché comme un arbre chargé des plus beaux fruits qui succombe à l'excès de sa fécondité.

FRANCOIS PERON was born at Cerilly, in August 1775. From his earliest years his intelligence exhibited itself by his extreme curiosity, and an insatiable desire for information. Scarcely had he learnt to spell, when his passion for reading became so strong, that, to gratify it, he had recourse to all those little arts to which children usually resort to procure their play. The death of his father having deprived him of all resources, his relatives wished to engage him in some lucrative trade. Almost in despair at the thoughts of being torn from his favourite delights, he prevailed on his mother to send him to the College of Cerilly, where the Principal, delighted with the tastes of his scholar, became much attached to him, and spared no pains on his improvement. His elementary studies being finished, he advised him to become an ecclesiastic, and the curate of the town consented to take him under his roof, and superintend his professional pursuits.

Up to this period, Peron, absorbed in his studies, was quite ignorant of the extraordinary events which were then agitating the world. He .eard of

them with astonishment; and, seduced by those principles of false liberty which led to the Revolution, inflamed by what is misnamed patriotism, and seduced by the examples of ancient history, he longed to embrace the profession of arms. He then quitted his home, betook himself to Moulins, and joined the battalion of L'Allier, towards the close of the eventful year 1792. He was soon sent to the army of the Rhine, and found himself at the Siege of Landeau, where the garrison maintained a most obstinate defence. After the siege was raised, he rejoined the army in the field, fought in the battle of Wissembourg against the Prussians, and was again present when the French experienced a defeat at Kaiserslautern. On this occasion Peron was wounded and taken prisoner; he was soon conducted first to Wesel, and then to the Citadel of Magdebourg. It was many years after the occurrence of these events, when, on the bosom of the wide Atlantic, he entered in his private journal the following reflection:—"Alas! how many excesses and villanies have soiled the trophies of our soldiers!—how many a deep sigh have they wrung from my heart! I could not, indeed, restrain them; but I never joined in them: though I was young and enthusiastic, yet the rights of misfortune were always sacred in my eyes."

During his captivity he gave himself up to study, to which even when on service he was much addicted; and now that he had no other employment, he devoted himself, without distraction, to the read-

ing of history, and the careful perusal of voyages and travels. Being liberated from prison, in exchange, in 1794, he was discharged from the army on account of the loss of an eye, and returned home in 1795, at the age of twenty.

After remaining several months in the bosom of his family, wishing for some active and honourable employment, he solicited the Minister of the Interior that he might become an élève of the Medical School of Paris, where, for three years, he not only studied Physic, but also devoted himself to Zoology and Comparative Anatomy, and then took his degree. His previous study of Mathematics, of Languages, of Philosophy, and, most of all, his own reflections, had given him such a methodical turn, that he was enabled to arrange and classify his knowledge with wonderful rapidity, in every department of science, and to an extent that astonished his associates.

But, whilst ambitious of distinction, and enamoured with study, a still stronger passion now took possession of his heart; he *loved* with all his constitutional enthusiasm; but his suit being rejected, on account of his poverty, he was almost driven to despair. His distress was extreme, and he took a disgust even to his country, in which his cruel disappointment was often forced on his notice, and where he no longer expected either comfort or peace. Not being eligible for the army, he looked round for some other adventurous career, and the Government Expedition to the Southern Hemisphere, consisting of two frigates, *Le Geographé* and *Le Na-*

turalist, being on the eve of departure, he solicited an engagement in the service; but the complement of *Savants* being filled up, his offer was rejected. Under these circumstances, he applied to M. de Jussieu, one of the Commissioners for the appointment of Naturalists, imploring his good offices, and at the same time explaining his views with an enthusiasm which manifested he was capable of executing what he so boldly planned. Jussieu listened with astonishment, and advised him to present a written explanation of his plan. He then recounted to his colleagues his conversation with M. Peron; and, in concert with Lacépède, determined not to repel a young man in whom was conjoined such extraordinary energy, with an extent of information much above his years. Some days after, M. Peron read to the Institute a Memoir on the importance of adding to the other *Savants* of the Expedition a person who was at once a Physician and a Naturalist, and who would especially undertake to make researches on Anthropology, or the natural history of man. Every one was delighted with the suggestion, and the Minister conferred on Peron the appointment of Zoologist to the Expedition. The short time that was now at his disposal he employed in obtaining from Messrs Lacépède, Cuvier, and others, such hints as would be useful in his researches. He determined to devote his energies principally to Zoology, as that portion of Natural History which presented the widest and most inviting field. He procured the necessary books and

instruments; bid adieu to his relations at Cerilly, and, smothering that affection which had so overwhelmingly affected him, he proceeded to Havre. The Expedition sailed on the 19th October 1800; he, with most of the *Savants*, being on board *Le Geographé.*

Though several campaigns had familiarized M. Peron with privation, yet, on board of ship, he found himself more put about than he anticipated. Having arrived after all the others were accommodated, there was but a pitiful corner left for him; however, in the midst of agitation and bustle, he retained all his composure and self-possession, and did not lose a moment. The very day he went on board he commenced his meteorological observations, which he constantly repeated every six hours, and which were never interrupted during the whole course of the voyage. Shortly after sailing, he made some important experiments regarding the temperature of the water of the ocean, which demonstrated it was colder in proportion as the depth increased. On reaching the Equator, the whole crew were greatly astonished by an appearance which presented itself. One night, when the heavens were very dark and cloudy, a bright band, as of phosphorus, covered the water at the horizon; presently the ocean seemed in a flame, and sparks of fire appeared to rise from its surface. Our voyagers had often witnessed the phosphorescence of the sea, but they had not seen the aurora borealis, for which they took it; but, on advancing, they discovered that this extraordinary

light was produced by a countless multitude of small animals which appeared like sparks of fire. Many of them were brought on board, and M. Peron found, on examination, that they successively assumed all the colours of the rainbow,—at first shining with great brilliancy, till their usual irritability being enfeebled, their colour faded, and entirely disappeared.

The impression which this phenomenon made on Peron, and the peculiarities presented by the organization of these zoophites, determined him to investigate this class of animals; and, during the whole of his voyage, he and his friend Lesueur were ever watching at the ship's side, that they might collect all they could procure. No new object in Natural History can be accurately comprehended without the aid of figures, and hence the great importance of designing, to a Naturalist. Peron was no great artist himself, but his friend Lesueur, who was, moreover, an excellent observer, drew, under his direction, those gelatinous animals whose forms and colours changed every moment after they were taken from the water. The two friends laboured in concert; the one painted, the other described; in their work they had but one soul, and neither wished to exalt himself at the expense of the other.

After a voyage of five months they reached the Isle of France. Here they completed their stores for the Antarctic Seas; and some of the Naturalists, not receiving the necessaries they expected, and discontented with the treatment they experienced,

remained in the colony, whilst Peron considered himself bound by his engagement. Our limits do not permit us to follow him through all the details of his adventures, but we shall stop a moment at those spots which formed the principal scenes of his labours.

Sailing from the Isle of France, they shaped their course to the Western Shores of New Holland, and anchored in a bay which, from the vessel which first rode in it, they named *Geography Bay.* They then skirted along the Western Coast, surveying many harbours, and anchored for refreshment at the Island of Timor.

It is chiefly to Peron's stay in this spot that we are indebted for his labours on the Mollusca and Zoophites. The sea is shallow, and the excessive heat seems to multiply prodigiously these singular animals, and to adorn them with the brightest colouring. Peron spent nearly the whole day on the shore, plunging into the water in the midst of the surf, always at the danger of his health, and sometimes of his life. With the shades of evening he returned from his work, loaded with numerous specimens, which he reviewed, and of which his friend sketched the most remarkable objects. Neither the misfortunes which had befallen the other Naturalists, nor the dangers with which he himself was threatened, had any power to relax Peron's zeal. Nor did his industry, in collecting the innumerable productions of nature, hinder him from finding time for observations of a different kind.

He spent many days in penetrating into the interior of the island, and in examining the aborigines. Though he did not understand their language, ne possessed such a ready power in comprehending their gestures, and the inarticulate language of nature, that, to a great extent, he understood them; and he had the same success with the savages of New Holland and Van Dieman's Land.

Struck with the fact that, during their stay at Timor, his companions were almost all sick, whilst the natives were not suffering, he set himself to investigate the cause of the difference, and discovered it in the use which the inhabitants make of *Betel*, or water-pepper.

On leaving Timor, they sailed direct for the South Cape of Van Dieman's Land. After having surveyed its Eastern portion, they entered the Bass Straits, and then followed the South Coast of New Holland. Here they suffered extremely; and when they reached Port Jackson, their condition, from privation and disease, was such, that only four of the crew could perform duty; so that, had they been detained a few days longer at sea, they must all have perished.

On reaching this friendly port, Peron again found himself in the midst of civilized society, and received many marks of kindness and consideration. But instead of resting from his fatigues, he only enlarged the limits of his labours. He prosecuted his researches into the physical history of man, by studying the civil and political constitution of this

most wonderful colony, whose laws, at once sage and severe, have converted highwaymen and robbers into industrious labourers; and where depraved women, without character, have abandoned their vicious courses, and become the respected mothers of thriving families.

After their departure from Port Jackson, whence *Le Naturalist* was dispatched to France, another voyage, no less hazardous than the former, was undertaken. Le Geographé proceeded to examine the islands at the western part of Bass Straits, again to explore the coast of New Holland, skirting along it as far as the Gulf of Carpentare. The dangers increased on every hand on these unsurveyed coasts, and were most severely experienced by the Naturalists, who lost no opportunity of penetrating into the interior. Peron, especially, displayed remarkable courage and activity. He went in quest of the rude savages, without being alarmed at their perfidy or ferocity; he also collected a great number of animals of all kinds; he seized every opportunity of examining into their habits, to discover any that might be useful to mariners on the desert land, or would be capable of domestication, or might be naturalized in Europe, or, finally, might become objects of commerce, for their fur, oil, or other products. Of the five Zoologists who had been appointed by government, two having remained at the Isle of France, and two having died at the commencement of the second voyage, Peron alone remained for the per-

formance of the duty, and he did it all. Engrossed in the great designs in which he was embarked, he regarded not the privations to which he was subjected. Shortly after their departure from Timor, the captain having refused the spirits which were necessary for the preservation of the Mollusca that were collected, he appropriated the whole of his personal allowance to this purpose; and, what was still more remarkable, his enthusiasm spread to many of his companions, who followed his example, and made the same sacrifice.

It was, especially, in the midst of dangers that Peron exhibited the energy of his character, his powers being redoubled when he encountered difficulties. During storms he used to work as a common sailor, and all the while would be observing as composedly as if he were ashore. No event diverted his attention from whatever promised a useful result, and he was always quick in improving circumstances. Having gone ashore on King's Island with M. Lesueur, and several other of his companions, a sudden gale drove the ship to sea, and they saw nothing of her for fifteen days. Peron did not for an instant lose his equanimity; he patiently prosecuted his researches without foreboding the evils which might betide. During his stay on this island, whose most magnificent vegetation presents nothing for the nourishment of man, he, without shelter, and in despite of the violence of the tempests, collected more than 180 species of Mollusca and Zoophites; he, moreover, studied the nistory of

those gigantic seals, the Proboscidea, which assemble in thousands on the coasts, and whose history forms a striking feature of our volume; and he examined the habits and mode of life of a small colony of eleven miserable fishers, who, separated from all the world, prepare in this place the oil and skins of the Seals, which the English traders come at distant intervals to procure. These poor people live in huts, and feed upon the Emu or Cassowary and Kangaroos, caught by dogs trained for the purpose, and upon the Wombats they have domesticated. They readily shared their meagre fare with the strangers, and treated them with a hospitality which is often more strikingly exhibited among a simple and feeble race, than in the midst of civilized society.

During their last sojourn at Timor, Peron completed the observations he had previously commenced there. He had frequent intercourse with the natives, and now more maturely studied their manners, government, and character, because he better understood their language, which is a dialect of the Malay. With no other associate than his friend Lesueur, he did not fear to chase the numerous crocodiles which, to the inhabitants, are objects alike of terror and veneration. Without other help they killed one of these animals, and prepared the skeleton, which now adorns the gallery of the Paris Museum.

Being prevented by contrary winds from touching at New Guinea, they returned to the Isle of France,

where they remained five months. There Peron, after examining his collections, devoted himself to the study of its fish and Mollusca; and, notwithstanding the exertions of preceding Naturalists, ne collected many new species. After this, they remained a month at the Cape, where he improved the time by making the first accurate examination of the singular conformation of a tribe of the Hottentots, known by the name of Bushmen, many of whom happened at the time to be at the Cape.

Finally, after an absence of three years and a half, he landed at L'Orient in April 1804, and immediately proceeded to Paris. He was there engaged for several months in arranging the specimens, and preparing the catalogue, after which they were all deposited in the Museum. Peron then hastened to Cerilly, to visit his mother and sisters. The exhausted state of his health, arising from his long continued fatigue, and still more from the nascent germ of that disease, which was even now working in his frame, made repose absolutely necessary; and, happy in finding himself in the bosom of his family, after having done good service, he thought little on the recompence of his labours. He soon, however, heard that some were endeavouring to persuade the government that the grand objects of the expedition had failed; and this immediately brought him to Paris to refute the calumnious imputation. He visited the Minister of Marine, and, with him, found M. de Fleurieu, and several other savants. Before them all, in a modest and respectful tone, but at the

same time with confident freedom, he demonstrated what his companions had done for geography, mineralogy, and botany; he enumerated the objects which had been procured, the drawings which had been executed, and the observations and descriptions which had been amassed, saying but little of the dangers which had been endured, and the sacrifices which had been made in obtaining the collection. Questions were put to him, which he answered promptly and satisfactorily; and the impression made upon the minister was such, that, after requesting him to visit him at all times, he engaged his services, to prepare for publication the nautical portion of the voyage, and promised to speak to the Minister of the Interior concerning the historical part. Accordingly, he had the same success with this latter functionary, who entertained him in the most flattering manner, and appointed him, along with his friend Lesueur, to publish the account of the whole voyage, including a description of those objects which were new in Natural History.

Thus was Peron, all at once, placed in the ranks of celebrated men; he was courted and surrounded by admirers, and took pleasure in relating what he had witnessed in his voyages; and the interest with which he was listened to often induced him to enter into minute details.

In the meanwhile, the collection, now arranged in the Museum, was to be examined, and a commission named by the Institute was appointed to report

to Government. This commission was composed of Messrs Laplace, Bougainville, Fleurieu, Lacépède, and Cuvier; and their report, drawn up by Baron Cuvier, bore that the collection contained more than 100,000 specimens of animals, amongst which were many new genera; that the number of new species was more than 2500, and that Peron and Lesueur alone, had made us acquainted with more animals than the whole of the travelling Naturalists of modern times; and, finally, that the descriptions of Peron, prepared upon a uniform plan, embracing all the details of the external organization, establishing their characters, in a positive manner, exhibiting their habits, and the economic uses to which they might be applied, would survive the revolutions of arrangements and systems.

Although Peron was now chiefly occupied with his great work, the account of the voyage, yet he deemed it expedient to detach from it a variety of separate memoirs, which he read to the *Institute*, the *Museum*, and *La Societé de la Medicine*. Among these was the memoir on the genus Pyrosoma, that Zoophite so pre-eminently phosphorescent, of which we have already spoken; another was on the temperature of the sea; another on the petrified Zoophites which were found in the mountains of Timor; and others on the dysentery of hot climates; on the Betel; on preserving the health of seamen; on the localities of Seals; and on the strength of savages when compared with civilized men; lastly, he undertook a complete his

tory of the Medusa, concerning which, he had made many observations, and of which he collected a number of new species.

In due time, the first volume of his "*Voyage aux Terres Australes*" appeared, after being long delayed by the plates, and an opportunity was then afforded of judging of Peron's merits. We find it distinguished by the most scrupulous accuracy with regard to facts, a merit of primary importance in works of this kind. The descriptions of the soil and climate, and the meteorology, present phenomena which are extremely curious; and the comparison of our author's views with those of previous voyagers, often lead to general results. The sketches of the wandering tribes of New Holland, and those inhabiting Van Dieman's Land, make us acquainted with two races of savages of shocking ferocity, and expose the limit of the misery and degradation of the human race. No voyager, with the exception of Mr George Forster, (who, like Peron, is often quoted in the following pages,) has been so successful in seizing the physical and moral qualities which distinguish different tribes, and in marking the connection between their organization, manners, intelligence, and numbers, and the resources which their soil afforded them; and if Forster's narrative is superior, from the excellence of its style, our voyager has the advantage of being free from every systematic bias, and has withheld from his sketches the colouring of romance.

Peron lived to finish only the first half of the

second volume, which is in no way inferior to the first; his sufferings not preventing him from proceeding to the last with undiminished care.

Our indefatigable author had also made some progress in another work of more than ordinary magnitude and importance. This was a comparison of the different races of mankind. He had collected observations on this point from every traveller and physiologist, and had himself examined the natives of the Cape, of Timor, and those of New Holland and Van Dieman's Land; his design being to present a philosophical history of different nations, considered in their physical and moral constitution. He proposed, vainly as it proved, not to publish this work, which had been the subject of his thoughts since his first starting, till after he had made three other voyages; one to the northern parts of Europe and Asia, a second into India, and the third to America: to devote fifteen years to this task did not appear to him too great a sacrifice; the plan was formed, the various inquiries were arranged, and he unceasingly occupied himself in finding the answer to the proposed problems. He had prepared several memoirs on this subject, which he consigned to oblivion, because they were not free from error. The fragment which contains the history of the natives of Timor is the only one nearly finished, the figures which were to accompany it, having been designed on the spot.

His portfolios included also a description of the quadrupeds, birds, and fishes he had met with, and

especially of the invertebral animals, whose history he had undertaken, and of which his friend had made more than a thousand drawings. These animals still exist in spirit of wine; the drawings were executed from the recent animals; and M. Lesueur, who assisted in collecting them, could supply much information concerning their habits, and their mode of life.

For a systematic analysis of the different memoirs which Peron read to the Institute, and other learned bodies, and an exhibition of the new facts and the important results which these papers contain, we refer the student to an eloge in the 7th vol. of Mem. de la Soc. d'Emulation, wherein M. Alard has performed the task in a manner that admits of no improvement.

With regard to his moral character, Peron not only gained the esteem and friendship of those with whom he associated, but also acquired an extraordinary ascendancy over them. He was also most disinterested and generous. The minister conceiving that his small pension was altogether insufficient for his requirements, wished to appoint him to some lucrative and honourable post. "Sir," he replied, "I have devoted my life to Science, and no bribe would tempt me to spend my time in other pursuits. If I had an office I should discharge its duties, but I am not at liberty so to dispose of myself." When he was entrusted with the preparation of the account of the voyage, he betook himself to a small apartment near the Museum, along with his friend Le-

sueur, and there lived almost penuriously, with the sole object of increasing the comforts of his family.

Meanwhile, his pectoral complaint made fearful progress, he suffered severely from it, and his cough and fever never left him. He soon came to the conviction it was incurable; and that it was useless to take care of himself, or to cease from his arduous labours. Being urged, however, to go to Nice, he thought it his duty to comply, and the journey and climate, for a time, checked his malady. Upon this he immediately recommenced his labours with fresh ardour. He went out to sea in an open boat, and spent whole days on the water collecting mollusca and fishes, prosecuting those inquiries to which he was devoted; and it was only that he might not distress his inseparable friend, that he would ever retreat from the rain and cold, to which he frequently exposed himself. The letters he wrote from Nice were absolutely enthusiastic; he painted in the liveliest colours the joys imparted by the study of Nature, and was altogether inebriated with some discoveries he had made. But, after all, he was conscious the tide of life was fast ebbing; he rejoiced he had obtained a few months respite, and he so improved them, that the collection he there made was extremely valuable

On his return to Paris, Peron's health became worse than ever, and he had now no hopes whatever of his restoration. He anticipated his approaching end with surprising tranquillity, and retired to the place of his nativity to finish his days. He bid a

last adieu to his friends at Paris, a duty most painful to himself, and to them. From an opinion entertained of the sanatary virtue of a cow-house, his bed was prepared in a building of that description, which belonged to an old school-fellow and friend, and where every comfort was supplied. When he required nourishment, his sisters, or his unwearied friend, milked the cows, and gave him the warm milk, which he took with pleasure. He was now surrounded by those who were most dear to him; and disentangled from all thoughts of his reputation, he often said that his last days were the happiest of his life. His friend read a great deal to him, which afforded him gratification. Every thing like irritability and impatience had now disappeared, and his reflections for the future were much engaged about those he left behind. In these circumstances his strength rapidly declined, and he breathed his last on the 14th December 1810, another proof that Science has its martyrs, and that its surest victims are often its most ardent and successful votaries.

INTRODUCTION.

We purpose, in our present volume, to introduce to the notice of our readers those animals which most Naturalists class under the name of Amphibia, and, more properly, as *Amphibious Carnivora*. This interesting group consists of two families, the *Walrus* or *Sea-Horse*, and those animals which are popularly known under the name of *Seals*, including a vast variety of creatures which differ greatly from each other. All these animals are mainly aquatic, but frequently also resort to land, where they remain for days, and even for weeks and months. To the consideration of these Amphibia, we mean to add that of the Herbivorous Cetacea; not because, with some Zoologists, we judge this to be their more natural position, but, we are free to confess, solely for convenience sake; because, though, in a former volume, we were solicitous to associate the herbivorous with the ordinary Cete, or true Whales, yet we found that the latter formed so extensive and important a subject, that, in doing justice to them,

we could not overtake the other. These herbivorous Cete differ, in many important particulars, from the true Whales. They are not like them blowers, with a spiracle upon the summit of the head, but have regular nostrils like quadrupeds; nor do they frequent the deep ocean, but habitually resort to the sea-shores, and the estuaries of rivers. In both these particulars the herbivorous Cete associate more closely with the Amphibia; but from them, again, they differ in their structure, in that their extremities, more especially the posterior, almost wholly disappear; whilst they are still present, though much modified, in the Seals; and also, because they never leave the water, whilst, as we have already noted, the Amphibia often do. To these two groups we propose to add a third. The term Cete, we remark, though now confined in the manner above referred to, was, by the ancients, used in a wider sense, being made to include, along with the Whales, those animals which they regarded as *Sea-Monsters*. We have but very obscure intimation of what these Monsters really were; they were not true or common fish, but were reputed to be prodigious animals, whose form and nature were imperfectly understood; and which were peculiarly the objects of vulgar wonder and superstitious dread. Now, it so happens that, even at the present day, it is asserted that such Monsters exist, whose characters all the assiduity of Naturalists has not hitherto satisfactorily ascertained, and the consideration of these will form the concluding portion of this volume. The

most remarkable of these creatures are the SEA-SERPENT and the KRAKEN; and, as some allusion to these animals would naturally be expected in the Naturalist's Library, so no occasion could be found so eligible as the present. The *Amphibia*, then, and the *herbivorous Cete*, the *Sea-Serpent* and *Kraken*, will form, at least, a natural combination.

These creatures must prove a peculiarly interesting subject to every inquiring mind. Most of our readers are probably aware, that some of these animals constitute the ground-work of the many strange stories which, from age to age, have been current concerning *Sirens, Mermen, Mermaids*, &c. Very decidedly, we say, that these were not, and are not, altogether baseless figments, though much error prevailed, and sober truth was obscured. Every intelligent individual will be forward to inquire which of these animals is the type of these far-famed and ill-defined beings; and, we may here state, in a word, that we shall take an opportunity of answering this question, and of showing that several distinct kinds of animals have given rise to these interesting narratives

The truth is, that much remains to be done in elucidation of all the groups of which we propose to treat; and, certainly, not least of the Seals. Most individuals must have heard of the fleets that are fitted out to hunt these creatures within the Antarctic, as well as the Arctic Zone. One species extends to the length of twenty-five and thirty feet, with a more than ordinary proportionate bulk, so

that it reaches to half the dimensions of the Great Greenland Whale. In comparison of this extraordinary size, all merely terrestrial animals sink into insignificance, and hence we cannot wonder that this animal has received the name of the *Elephant Seal.* There are others which attain very huge dimensions; and most well educated persons must have heard something of those objects of astonishment, described by mariners under the various names of *Sea-Lions* and *Sea-Leopards, Sea-Bears* and *Wolves, Sea-Horses, Cows,* and *Calves, Sea-Dogs, Swine, Hares,* and *Apes,* which, we shall show, are nothing more than some of the names applied to the animals we are about to describe, and which are really not less interesting than their terrestrial namesakes.

> "In the waters we may see all creatures,
> Even all that on the earth are to be found,
> As if the world were in deep waters drown'd."

It must not, however, be supposed, that it is from approximating to the marvellous that our subject derives its only, or even its chief claim to attention. A moment's consideration evinces that the external circumstances of most of these animals, and, consequently, their habits, must be altogether peculiar. The Amphibious Carnivora are formed on the same general model as other quadrupeds, and yet the land is to them a strange and unwonted element. Their usual abode is in the sea; and hence there must be interesting modifications whereby their structure is

adapted to the water. This will lead to a short elucidation of their Comparative Anatomy, eminently exhibiting the workings of creative power. We have also hinted that they are objects of commercial and national importance. For them navies float, and the bold seaman penetrates the polar seas, and circumnavigates the globe. To him, therefore, it is an object of deep importance, accurately to know, and speedily, and certainly, to meet and to capture his prey. This leads to inquiries regarding the resorts of these animals, their habits, their energies, and powers, all of which are curious and interesting. Hence, then, we shall be led to dwell somewhat both on their dispositions and intellectual endowments, whilst we must not overlook the valuable products which lead to their capture, and the whole varied details of the animating adventure.

And now we will, in a word, indicate to those who may not have much acquaintance with the subject, that it is one peculiarly beset with difficulties, arising chiefly from the retired retreats and habits of the group. We shall do this, however, in other words than our own. "Les phoques," says M. F. Cuvier, in 1826, "sont généralement, des animaux très peu connues." And Desmarest, "The various species of Phoca are as yet but little known; the descriptions of travellers, and of most Naturalists, are not sufficiently minute to enable us to distinguish them; and it is probable that their number is much more considerable than is at present supposed."—(Mam. p. 238.) And, once more,

the respected author of The History of British Quadrupeds, in 1836-7, remarks—" There is not, I believe, a single group among the whole of the Mammiferous class, which is at present so indistinctly known, and of which the species are so much confounded, as the Seals."

How far we have succeeded in elucidating the subject must be left to the judgment of others. To a few facts, however, concerning our plates, we shall take the liberty of adverting. Our volume is, we believe, the vehicle of delineating, for the first time, four of the most important species of the group. These are the animal which we regard as the Bearded Seal, (No. 5;)—the one which, on high authority, we have been led to understand is the female Sea-Elephant, (No. 17;)—that one which we have called the Sea-Lion of Pernetty, (No. 19;) and the Fur-Seal of Commerce, (No. 25;) to which we may add, that the Sea-Leopard (No. 12) has not, so far as we know, appeared in any work on Natural History. The drawings of these five are in fact original, four being taken from specimens in the Royal Museum of the Edinburgh University, and for information regarding which, we are proud to acknowledge our obligations to the distinguished Professor of Natural History; whilst the remaining one has been derived from the splendid specimen which graces the Liverpool Museum, and for further details concerning which we must refer to the body of the work. Besides these, there are ten other species, taken from French, Russian, and American autho-

rities, which are now, for the first time, presented to the British Public. These are "the true P. vitulina" of the French Coast, (No. 3,) and the Marbled-Seal, (No. 4,) of the distinguished Cuviers; the Rough-Seal, (No. 8,) one of those animals which constitutes a considerable portion of the Northern Seal fishery; the Hare-Seal of Northern Russia, (No. 9;) the Small-nailed Seal of De Blainville, (No. 11;) the Crested-Seal, (No. 14,) and the Hooded-Seal, (No. 15,) over both of which there still hangs considerable obscurity; the Sea-Elephant of Peron, (No. 16,) the chief object of the South Sea fishing for Seal oil; and the Cape, (No. 20,) and Lesson's Otaries, (No. 24.) These exhibitions of fifteen species, (may we call them?) obtained from sources and authorities of established celebrity, together with those more familiarly known, and our best efforts to associate with each whatever specific information has been collected, will do something, we trust, to increase the facilities of investigation, as well as provoke the further endeavours of Naturalists, and others, to new triumphs over the many difficulties which still envelope this interesting subject.

THE AMPHIBIOUS CARNIVORA.

An *Amphibious* animal is said to be one which is able to live in two elements, the elements implied being air and water; and there was a time when it was generally supposed that there were such quadrupeds in existence. The reader will please to observe, that we are not here speaking of animals which can reside on the land, and in *and on* the water; for such there unquestionably are; on these we are about to dwell, and in this old and familiar acceptation of the term we mean to use it.* But the time

* For this we can quote nearly universal usage, in the present and preceding ages, and some of the most authoritative names in the science; amongst others those of Baron Cuvier and Latreille. It is true that Cuvier did not here follow the footsteps of Linnæus, who placed *these* Amphibia in his 2d and 3d order, *Bruta* and *Feræ*, and made the Amphibia his 3d class, including Tortoises, Frogs, Serpents, and many true Fish, such as the Sturgeon, Shark, Skate, &c., so making a great jumble. We may add,

is not long gone by when it was supposed that these Amphibia differed from all other animals, in that it was to them a matter of indifference whether they lived on land, and breathed the common air of heaven, or resorted to the water, and there carried on the process corresponding to that of respiration, as do the fishes in the sea. It is generally known that both in quadrupeds and fishes there is a kind of double circulation of the blood, the greater, moving round the whole body, for the purpose of its growth and regular nourishment, and the lesser, confined to the lungs or the gills, having for its object the purification of the blood, that it may be fitted for its proper uses. It was very evident that, when living in the water, these Amphibia could no more use their lungs than man could do, and it was equally well known that they had no gills, by which they could live as fish do; and the question therefore occurred, By what peculiar arrangement is it that these animals live in water without gills and without air? Nor was it long before an explanation of the phenomenon was offered. The two circulations above alluded to do not communicate with each other, generally, throughout their circuit; but

that previous to Linnæus' death, a single animal was discovered which could live not only on land but also *in* water. This was the Lizard Siren of Carolina, which is possessed of true lungs and true branchiæ, and can use them severally on land and in water. Since that date a few other animals have been discovered similarly constituted; and this has led Naturalists to arrange them in a separate class or subdivision.

in the Amphibia it was held that a sluice-gate existed between the two, which was opened when they were under water, so that no obstruction occurred to the circulation. By this aperture, (which existed in the heart, and was called the oval hole, *foramen ovale*,) it was asserted that both circulations went forward, and without any prejudice to life. It is because this statement still maintains its ground in some of our most popular works on natural history that we have thought it right to notice it. Thus the eloquent Buffon,—"The Seals and Walrus alone can live equally in air and in water, and consequently they alone merit the appellation of Amphibious." And no wonder the Count made this statement, because he only quoted the memoirs of the most learned societies of the day,—"As these animals remain long in the water, and thus the transmission of the blood cannot be performed without respiration, they have the *foramen ovale* open, and therefore do not require to respire."* In these sentiments he in fact only re-echoed the opinions of the Physiologists of his time.†

The hypothesis was in fact based on erroneous statements, which passed current for facts. It is true these Amphibious animals live long in the water, but still they must regularly come to the surface, and they breathe precisely after the manner of

* Hist. de l'Acad. des Sciences, tom. i. p. 84.

† Though this explanation is sufficient apology for Buffon, yet the same theory, founded on the same errors, should not have appeared in Bingley's British Quadrupeds, 1829.

their namesakes the Common Dog or Lion. Not that there is no distinction between their respirations, but this difference refers to time only, and not at all to method. Many of the Mammalia breathe twenty times in a minute, and every one knows he cannot long suspend this vital function; whereas the Seals, instead of breathing twenty times in a minute, will occasionally not breathe once in twenty minutes. We should be happy could we at once account for this difference. The Amphibia often feed under water; they dive for their prey, they generally swim under the wave, and therefore the attribute is essential to them. It is best, however, at once to avow our ignorance, and to confess that hitherto the fact has not been satisfactorily accounted for. Some peculiarities in their circulation have indeed been noted, and go some way, perhaps, in the elucidation of the point. Thus, we are told by Baron Cuvier that they have a great reservoir for venous blood in their liver; and Mr Houston of Dublin has recently succeeded in demonstrating other venous reservoirs in other neighbouring parts; and so far this is valuable as a fact, and may assist in the explication of the truth. But it would be a great mistake to suppose that the establishing this anatomical fact, is the same as explaining how the function of respiration can be suspended in the Amphibia so much longer than in the other Mammalia. These last are not quite destitute of venous reservoirs or sinuses, and, moreover, what is desiderated is not only an apparatus to contain the vitiated, and by many

reputed hurtful and poisonous blood, but rather a reservoir of purified arterial blood, which would gradually pour forth its contents as circumstances required. Such an apparatus has lately been pointed out in Whales, and satisfactorily, we think, accounts for their capabilities, but we believe that no corresponding provision has hitherto been detected in the Seals—though we would almost venture to predicate its existence.

But leaving this point, we proceed to remark, that the *bodies* of the Amphibia are beautifully modified for their requirements in the watery element. If we glance at the general shape of any of the Seals, it will appear that its trunk as much resembles that of a fish as that of a common quadruped. This change is effected chiefly by a modification of what is called the pelvis, corresponding to the haunches in man. In the herbivorous Cete the bony framework of these parts disappears, whilst in the Amphibia it remains, but undergoes a great change. It becomes comparatively very small, and very much elongated, the bones of the opposite sides approximating to each other, so that the pelvis appears like an elongated and slender pyramid, terminating the trunk very much like the hinder part of a Whale.

The *extremities* undergo a still more striking change. The *fore-legs* or arms, which are destitute of collar-bones, are so hid beneath the skin of the

* See Nat. Lib. Vol. xvi. p. 49.

body, that only the wrists and hands appear; and they are thus so short that they can scarcely be advanced forwards at all. But what they lose in extent they gain in power. They are peculiarly constructed for swimming, and serve also for seizing or holding. The animal has the power of presenting to the water either the edge or the flat part of the paw; and it can moreover either approximate its fingers, which have an intervening membrane, and so are webbed, or it can separate them, so as to diminish or augment the surface of this oar or paddle, as it has been called. The *hind-legs* are still more modified. From the knee downwards they are placed not at right angles, but in a line parallel with the body. The thigh-bone is very short, and is so bent that its lower portion at the knee is anterior. The legs have in this way very little power of motion, the foot alone enjoying it; and that with great facility and power, especially in bending and extending itself upon the leg, thus removing it from, or approximating it to, the mesial line. One effect of this arrangement is very apparent, viz. that the posterior extremities, thus altered, are thereby much assimilated to the broad horizontal tail of the Whale tribe; and that the Phocidæ are thus, like them, enabled to dart towards the surface of the ocean for breath, and with a rapidity which otherwise they never could have attained. In all the species, the fingers can readily be distinguished through the paw; and in most the nails appear at the termination of the member. In one group, however,

this is not the case, and the very singular structure exhibited beneath presents itself.



Here, it will be perceived, the membrane extends far beyond the nails; and not as a continuous web, but like so many streamers, or broad leathern straps. which hang down in the water. We have not seen any attempt to assign a use to these curious appendages, which, in the language of the Seal-fishers, have given to the extremities the name of *flippers.*

With these several modifications we need scarcely remark that the amphibia are admirably adapted for *swimming*. Accordingly, Zorgdrager says, even of the clumsy-looking Walrus or Sea-horse, " That in descending the depths of the ocean, and swimming

along its surface, it is followed in row-boats with as much difficulty as the Whale itself." Again, Steller says of the Ursine Seals, "They swim with amazing swiftness and strength, even at the rate of eight miles an hour, and when wounded in the water will seize on the boat, carry it along with great impetuosity, almost as if they were flying, and will often sink it." And once more, our intelligent countryman Scoresby, "When coming to the surface to respire, the Seals often raise their whole bodies out of the water; their progress is pretty rapid; their action appears frisky, and their general conduct is productive of amusement to the spectator. The sailors, when they observe such a shoal, call it a Seal's Wedding."*

But though the habitual element of these amphibia is the water, yet their habit of resorting frequently to *land* must not be overlooked. The most urgent call for this is connected with the bringing forth and suckling their young; and, besides, they frequently resort at other times to the shore, and to ice-islands, and there delight to bask in the sun, or repose from the agitated wave. With limbs, or rather fins, such as we have described, it will at once be seen that the land cannot, by any means, be so natural or suitable a resort; and this should always be remembered, for they are sometimes judged as if they were wholly terrestrial. The fact is, that though properly enough designated

* Arctic Regions.

quadrupeds, they cannot even stand on their hind-legs; and, when advancing, they often make no use whatever of their fore-paws either; conditions these which would bring most quadrupeds to a dead halt. Not so, however, with these animals. Thus Captain Weddell remarks of the Fur-Seal:—"The agility of this creature is much greater than from their appearance an observer would anticipate. I have seen them, indeed, often escape from men running fast in pursuit of them;"* and Scoresby, "They cannot be said to walk, yet they shuffle along, especially over the ice, with surprising speed."† And once more, "Even out of the water," says Steller, "especially the females, can run so rapidly that it requires a swift person to get up with them. Cursu vix ac ne vix quidem a celeri cursore superantur."‡ This, beyond doubt, far exceeds the powers of other quadrupeds;—without the use of legs to outstrip the speed of man; and thus we have here another of those peculiarities on which it is interesting to dwell, and to inquire in what way it is to be explained. We feel happy that on this point we can gratify our readers. Serpents, it is known, have a progressive motion, without feet, which is sometimes sufficiently rapid; but they move by bending their bodies from side to side, which Seals do not; and, therefore, these last do not advance like them. On the contrary, they move forward by a

* Voyage towards the South Pole, &c., p. 140.
† Lib. sup. cit. Vol. i. p. 509.
‡ Nov. Acta Petro. t. ii. p. 356.

vertical, not a lateral motion of their spines, somewhat after the fashion of the caterpiller. Referring the curious reader to the valuable memoir quoted below,* we shall now give in a few words a popular account of this strange phenomenon.

The remarkable fact is, that during the progression of Seals on land, the hind-feet are never employed, and the fore-feet not necessarily. In explanation, we observe, first, that there is a remarkable change effected on the structure of the spine, or back-bone. This is well known to be not a single bone, but a strong column of many bones, amounting to twenty-four in man, and to many more in the majority of quadrupeds. In most, there is between each vertebra, as it is called, an intervertebral cartilage, which we may compare to a piece of Indian-rubber, placed between the bones, to take off, as in man, the effects of every severe shock, keeping the brain on its summit free from all jar and agitation. Now, the intervertebral cartilages in the Seal are quite peculiar, and very large, especially in the regions of the neck and loins. Each of them is composed of a number of fibrous coverings, forming concentric rings, the more external of which are broad and strong, whilst the internal are smaller and more slender, the last, which lines the central cavity, being so fine, that it seems to assume the character of a serous membrane. The centre of this consider-

* For an able paper on the Osteology and Myology of the Seal, by M. Duvernoy, see Mem. du Mus. d'Hist. Nat. ix. pp. 49, 165.

able cavity corresponds with that of the body of the vertebræ, and is filled with a reddish-looking jelly. This curious structure, it will at once be seen, admits of far more extensive motion than is usual. Again, the muscles of the spine undergo great and corresponding modifications; but on these we shall not dwell longer than to remark that they are peculiarly strong on all sides. When, then, the Seal wishes to move forward, it bends underneath it the hinder part of its spine, so making a kind of arch, and then fixing this posterior portion, it suddenly straitens out the whole body in front; and in a repetition of this movement consists the very peculiar kind of jerking leap for which these amphibia are so famous. This is so singular that it has been dwelt upon, and described with sufficient accuracy, by several observers who knew nothing of their comparative anatomy. To give one example.—"Their mode of propelling themselves," says Weddell, "is by drawing their hinder flippers forwards, thereby shortening their body, and then projecting themselves from the tail."* When, again, they wish to ascend an ice-

* The account in the text is more satisfactory than the following, whilst it is, at the same time, corroborated by it. "The Common Seal in the Zoological Gardens, when on the land, scarcely uses its feet in walking, but only the abdominal muscles, jerking itself forward by a series of convulsive motions. It only used its fore-feet to assist in balancing itself, and when it turned on one side, it expanded its hinder feet, which are generally contracted and held together, with the depressed forked tail between their base." J. E. Gray, Annals of Nat. Hist.; Sept. 1838, p. 78.

island or rock, the facility with which they accomplish their object is altogether astonishing. They then make especial use of their fore-paws; and those which have claws implant them like so many grappling-irons, and having thus secured a fixed point, by means of the admirable structure we have been considering, they uplift their monstrous carcases with the greatest rapidity and ease.

Having thus noticed that the external structure of these Amphibia is admirably adapted for their watery element, and yet made wonderfully conformable to their requirements on land, we proceed to remark, that their vital functions also are strikingly fitted for their peculiar exigencies. Their *respiration*, as might readily be inferred, differs considerably from what is observed in most other animals. Even the air passages undergo a change, which ought not to be overlooked. We refer particularly to the nostrils, whose state, unlike that of other quadrupeds, is that of being habitually closed, instead of being uniformly open. This was first noticed, we believe, in a Walrus domesticated in England, of which, as will appear in our account of that animal, it was said, "It can open and shut its nostrils at pleasure." The Count Buffon, again, pointed out the peculiarity in a tame Seal which he examined—"In the intervals of breathing, the nostrils were accurately closed, and, on the act of inspiration being completed, they were shut as be-

fore." M. F. Cuvier, at a later period, made a similar observation, so that we apprehend we may safely affirm that this peculiarity exists in the air-passages as their ordinary condition. This state of parts of course supplies ready means of judging of the frequency of respiration, and here, too, there appears to be a marked difference, even on land, from what obtains among other animals. Thus Buffon, in the instance already alluded to, remarks, "The period between its several inspirations was very long: the creature opened its nostrils to make a strong expiration, which was immediately followed by an inspiration, after which it closed them, often allowing two minutes to intervene without taking another breath." In connection with this peculiarity, M. F. Cuvier makes an additional and important remark—"Notwithstanding the slow and irregular breathing of these animals, the regular supply of air to the lungs is in no degree diminished, if we may judge from the very free motion of the ribs, and the great quantity of air expelled at each expiration. In truth, the quantity of air taken in makes up for the small number of the respirations; for few of the Mammalia have appeared to me to have so high a natural temperature as the Seals."*

But, however great the peculiarity as exhibited on land may be, it is trifling when compared to its singularity in water; where it is not uncommon for these animals to remain for a quarter of an hour at a time

* Mammifères, Livraison, Sept. 1819, p. 2

under the wave, (the usual period even for Whales;) and we are not prepared to state what the extreme limit may be. Thus, Crantz states that when harpooned, they must come up in about a quarter of an hour to take breath;* and Mr Edmonston informs us that he once saw one of the Bearded Seals entangled in a net, which struggled with amazing force for more than twenty-five minutes, without once inspiring, and yet was brought to the surface alive.† An observation of M. F. Cuvier's is still more remarkable. He states, concerning those which were preserved in the Menagerie at Paris, that he has seen them, while asleep, keep their head under water consecutively, and consequently without breathing, for an hour at a time.‡ This is an extraordinary phenomenon, even allowing that the animal was in that somewhat lethargic condition, to which we shall ere long allude.

We now proceed to remark, that under water the Seals are often subjected to an enormous pressure, which must be resisted at the respective apertures of the body, by an appropriate mechanism. So is it, as we have already seen, in the *nostrils*, and a similar provision is made for the *eye;* and in more ways, perhaps, than one. Thus Albinus remarks, that at the inner angle of the eye there exists a third eyelid, which may easily be drawn over the whole eye; an apparatus, he adds, frequently supplied to those animals in which the eyelids are

* See our account of the Greenland Seal.

† View of Zetland, vol. ii. 295.

‡ See our account of the Monk Seal.

required as much for defence as for a covering.* Forster makes a similar statement; and to these remarks we subjoin a curious observation of Crantz, in relation to the Walrus. "As I was at first searching for the eye, and could not find it, a Greenland boy pressed the skin, and out sprung the eye; so I found I could squeeze them in and out to the depth of an inch, from whence I might conclude that these creatures also had a shelter for their eyes, in stormy weather, by drawing them into a safe repository." Finally, it is the same with the orifices of the *ears:* by means of a peculiar and somewhat intricate structure, described by Rosenthal, and to which we can here do nothing more than refer, it will be found that these apertures too can be closed, and thus made impervious to the greatest pressure from the superincumbent fluid.†

One or two circumstances regarding the digestive functions of the Amphibia, and more especially their alleged long protracted fasts, are highly curious. We premise, however, that we are not at all sure how far the opinion now generally promulgated, that they are *solely carnivorous*, is correct. At all events, it should be noticed that the testimony of many observers is against this opinion. Thus Crantz, "fish and marine vegetables are the food of the Walrus;" and Pernetty, "seals live upon fish, sea-birds, and herbs;" and Peron, "in the stomachs

* Academicæ Annotationes, Lib. iii.

† For some interesting particulars concerning the comparative anatomy of the group, see an interesting paper of Lesson's in Dict. Class. t. xiii. 403.

of those we killed we found squid (various kinds of *sepia*) and many fungi." It would hence appear they are *omnivorous.* But to proceed, it is a fact that many of them feed voraciously, and acquire an immense covering of blubber, with which they come loaded to shore. The period occupied by the processes of parturition and lactation is rarely stated at less than six weeks or two months, and is often said to be twice as long. Now, one of the circumstances on which we would insist is this, that many observers affirm that during the whole of this period they live without taking any sort of nourishment. The words of the famous Alexander Selkirk, as reported by Wood-Rogers, are these:—"Towards the end of the month of June these animals come on shore to bring forth their young, and remain to the end of September without stirring from the spot, and without taking any apparent kind of nourishment."* Captain Weddell's statement is still more striking:—"The males come ashore about the end of August and beginning of September. As they live while on shore entirely without food, they become very lean by the middle of December;"† and Peron says, that during the period in question no member of the family either eats, or goes to sea.‡ This opinion might be further corroborated by the statements of Forster, and of other respectable observers: but the proposition that

* See Kerr's Coll. of Voyages.
† Lib. supra cit. p. 153.
‡ Voy. aux Ter. Austr. t. ii. 40.

whole genera of this group, not hybernating, but all alive, and discharging the most important functions of the animal economy, can live for three consecutive months without food, is so startling, that we find the greatest difficulty in receiving it. Our scepticism, too, is the more excusable, inasmuch as the evidence on the point is not free from contradiction. Even the testimony of Peron is liable to this charge; for while, on the one hand, he states, in the words already quoted, "that during the period no member of the family eats," yet he elsewhere mentions, "that when on land, they suck in with delight the fresh water of the ponds and marshes they frequent; and that fungi were discovered in the stomachs of those they killed."* Nor is this the only evidence that may be adduced on this side of the question. The account of these animals given in Anson's voyage, though short, is explicit. "During the time they continue on shore, they feed on the grass and other plants which grow near the banks of the fresh water streams."† And once more, Pernetty, speaking of the Sea-bears, says—"They live on herbs, fish, and other animals, when they can find them near their lair.‡ This, we confess, appears to us by much the most probable account of the matter, and we cannot but suspect that the other,

* Lib. cit. t. ii. 44.
† Kerr's Collection of Voyages, xi.
‡ Voyage aux Maloun. t. ii. 41.

though supported by so many respectable names, has been at first advanced on insufficient grounds, and been propagated afterwards through inadvertency. These counter-statements should, at all events, induce us to receive the startling proposition with great hesitation and caution; and the more so, as, even with the precarious supplies just adverted to, it might be anticipated, that the animals could not fail to become in the last degree emaciated and feeble.

We have still to add a scarcely less singular circumstance, viz. that these animals are in the habit of filling their stomachs with an immense number of great hard stones, so that it is a wonder how their coats are not torn to pieces by them. Thus, in the words of Forster,—"The stomachs of some were filled with ten or twelve round heavy stones, each the size of two fists." The circumstances under which they indulge in this habit are not well determined. Most frequently it has been associated with their extraordinary fastings: but these cannot be the only cause; because sometimes they have been found in animals which had long been domesticated, and were taking their usual quantity of food. This suggested the idea, that the craving might be owing to their unnatural position on land; but this is met by the fact that sometimes they have been found in the stomachs of those recently captured. It was under these circumstances, we believe, they were found in the stomach of the Grey Seal, captured in the Severn, and now in the

Museum at Bristol. Peron says of the Proboscis Seal, "We usually fonnd in the stomachs fungi, stones, and gravel;" and Dr Parsons—"In the stomach of the Great Seal there were about four pounds of flinty stones." We have not met with any satisfactory explanation of this phenomenon; and we shall decline all speculations concerning it.

But we must bring these remarks on the physical constitution of the Amphibia to a close, by a very few hints concerning the nervous system, and more especially the senses.

The prevailing statement in the works on Natural History is, that the brain is much developed in this group, and the cerebellum comparatively still more so. Judging from an examination of crania, we should say, that this organ appears to vary very considerably in different species, and that while in all it is rather large, in some it is remarkably so. This perfectly corresponds with the degree of acuteness and intelligence which is nearly universally allowed them. Weddell observes that in instinct they are little inferior to the dog; and subjoins a remark which ought not to be forgotten, that their sagacity in water much exceeds that which they manifest on shore. With this fact in view, it is curious to observe how some Naturalists, having procured a few Seals, and placed them in a most unnatural state of domestication, to which they submitted with wonderful placidity, have, after minute observation, concluded that they were sparingly endowed

with all the chief instruments and outlets of mind. Thus the most elaborate, as it is the most celebrated, examination of the senses we have seen, is recorded in very much the following terms:—The *sight* in the Seal is perhaps less imperfect than the other senses, though they see best in a feeble light, and do not appear easily to distinguish forms. I draw this conclusion, says the author, the more freely, because the Seals, under observation, always came to examine every mess put within their reach, however much in appearance it differed from that which alone they would taste. The *hearing* is proportionally much less perfect than the sight. Having no auricular appendage, and passing a great portion of their time at the bottom of the sea, where the orifice must be closed, they must almost remain strangers to all sonorous vibrations; and the very trifling exercise to which these organs are subjected would alone suffice to produce the deficiency which is observed. The *smell*, judging from the external organization, should not be better than the senses already alluded to; the *taste* and *touch* are even worse; and to sum up in a word, " Ce que j'ai dit des organs des sens, ne doit laisser aucune doute sur leurs imperfection."* But this is too much to be endured. Suppose the circumstances reversed;—that some of these submarine beings, whose imperfections are thus contemned, had captured our unhappy Naturalist, and in some watery chamber of ocean sate in

* Ann. du Mus. t. xvii.

judgment on his five senses; and were then to infer that he was imperfectly constituted, because, in his hapless plight, he saw indifferently, heard and smelt worse, and so on; should we approve their inference, or admire their wisdom? The truth is, the eye of the Amphibia is a perfect study, and would well repay a lengthened description. It is very large, and quite spherical; the sclerotic or outer membrane is very peculiar, inasmuch as it has a soft and thin zone round its middle, thickly covered with muscles, whilst both before and behind it is thick and almost cartilaginous.* The precise use of this structure has not yet been discovered, though Blumenbach has thrown out the idea that it may enable the Seal to see both in air and water Rosenthal so far confirms this opinion by having observed, that the mechanism is peculiar to those animals which live in a dense medium, such as water;—that the remarkable thickness of the coat is found in those animals in which the orbit is not wholly osseous, and that some fishes have the sclerotic nearly cartilaginous. With regard to the ear, it ought not to be forgotten that fishes, with no external ear or aperture, have in their native element an acuteness of hearing which, according to some respectable authorities, far exceeds our own; and Rosenthal states that the auditory nerve of the Seal is very large. Respecting the sense of *touch*, we shall here quote M. F. Cuvier, who

* See its Dissection in the Crested Seal, by Drs King and Ludlow, in our account of that animal.

well remarks, "The whiskers are very sensible portions of the sense of touch. Those hairs placed on each side of the mouth, and at the corner of the eye, communicate with nerves which are remarkable for their size, and to which, as I have often convinced myself, the slightest impression communicates an immediate sensation." So is it, we believe, with the other senses; which we consider wonderfully adapted to both elements. Thus Buffon remarks of the Monk-Seal, on land,—"It had a very acute hearing, since even at a distance it never failed to obey or respond to its master's voice; and thus Captain Scoresby,—"Seals appear to hear well under the water; music, or particularly a person whistling, draws them to the surface, and induces them to stretch out their necks to the utmost extent, so as to prove a snare by bringing them within the reach of the shooter." And Weddell,—"Their sense of hearing is acute, and also their sense of *smell.*" It is on account of this last sense, that the Greenlanders always endeavour to approach them against the wind. And were we to judge of their *taste* by the keenness with which they relish their food, few animals possess it in equal perfection. The greatest gourmand's teeth do not water at the anticipation of the richest feast, as do theirs in expectancy of their common food. "A copious saliva," says M. F. Cuvier, "fills and flows from their mouth during deglutition, and not less so the moment the Seal perceives its prey."*

* Mammif. Sept. 1819, p. 5.

In a group so extensive as these Amphibia, the only correct method of coming to a knowledge of their habits and mental powers and dispositions, is by minutely considering the propensities of each distinct species; and for details we must therefore refer to the subsequent part of the volume. In the few remarks which follow, all that we can attempt is a very short and hasty sketch.

It is frequently stated in modern works, that it is not established whether Seals frequent inland seas, such as the Caspian, or fresh water lakes, such as Lake Baikal; which doubts are grounded chiefly upon supposititious difficulties as to the mode of their introduction into these detached and dreary waters Peron especially, although we believe we must also add Lesson, and after them Dr Prichard,* treat the opinion as altogether apocryphal and absurd. We cannot, however, but regard this as an error, the result of false reasoning, and insufficient care. Nothing can be more specific than Steller's statement that they frequent the Caspian, and the fresh water lakes, Baikal and Oron, which have no direct communication with the sea;† and nothing more circumstantial, and apparently correct, than Pallas' account, from personal observation, of these animals, in both these seas. The insinuation, that the creatures seen *might be* otters, is quite gratuitous, and cannot stand against the express testimony

* Prichard's Researches into the Phys. Hist. of Man, 3d Ed. i. 63, 65.

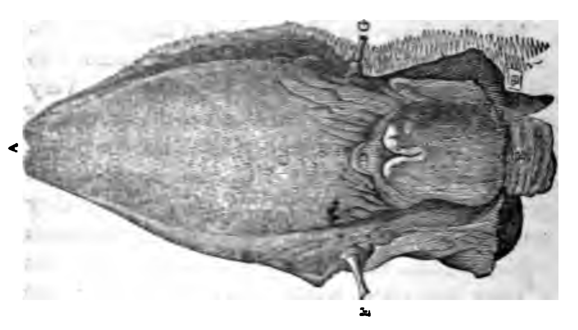
† De Bestiis Marinis, Nov. Com. Petro, t. ii. p. 290.

of the most eminent Naturalist of his day. When discoursing about the Caspian, Pallas states the particular situations in which he had seen them, and the spots which were famous for the numbers which they harboured. We shall quote a few words. "Seals sometimes ascend the Jaik or Aural in winter. Many have been killed both on the banks and inlets. The Seal of the Caspian is much fatter in autumn than those of the Baltic which I have seen. They appear more like a skin filled with oil than an animal, as you can scarcely recognise their head and fore paws for the fat. Their skin and blubber are taken to Astrakan, which supplies the oil throughout the Empire."* He is equally specific respecting the Seals of Lake Baikal, as will appear in the sequel. These statements leave, we think, no room for scepticism; and they might be multiplied by additional quotations from Anderson and others.† Bearing upon a somewhat similar point, we add the following fact:—"Lochaw, in the parish of North Knapdale, abounds with plenty of salmon, and the Seals come up from the ocean through a very rapid river, in quest of this fish, and retire to the sea at the approach of winter."‡

Most of the Seals are pre-eminently gregarious. Seldom are they seen except in flocks, amounting sometimes to hundreds, and in some instances even to many thousands.

* Voy. de Pal. t. i. pp. 674, 680-2.
† See Anderson's Iceland, t. ii. p. 169.
‡ Statist. Acc. vi. 260.

It is also deserving of remark, that they are decidedly migratory in their habits, the great stimulus to which appears to be the change of temperature. Very many are, from choice, inhabitants of the margins of the frozen seas towards both poles. But the line of the margin varies much with the season of the year. On the approach of the Polar winter they emerge from its dark and dreary solitude towards milder regions, and during the winter months select a more moderate temperature, where they are occupied with the all-important work of parturition. Their period of gestation is considered to be nine or ten months, and their progeny never exceeds one, or at most two, at a time. In the herbivorous Cete the mammæ are pectoral, whilst in the amphibia they are ventral. Their number, in some species of Seals, is said to be two, and in others four; the *teats* lie concealed in the skin, so defending them from the exposure arising from their crawling when on land. Thus placed, the nipples are seized by the young with more difficulty than is usual; and to assist them, it has been alleged that the *tongue* has received that bifurcated termination, which is seen in the margin, which is a curious feature in many, if not all Seals, and is, we believe, more conspicuous in them than in any other of the Mammalia.



The important work of lactation and procreation accomplished, with the returning spring the Seals again resort to their more distant and almost impenetrable icy haunts, where, in that deep solitude which they love, and almost removed from human ken, they spend their time in a way with which it is not easy for us to become familiar. The regularity with which these migrations are accomplished is often remarkable; and is thus alluded to by an ancient Poet:—

When they the approaching time perceive,
They flee the deep, and watery pastures leave:
On the dry ground, far from the swelling tide
Bring forth their young, and on the shores abide,
Till twice six times they see the Eastern gleams
Brighten the hills, and tremble on the streams.
The thirteenth morn, soon as the early dawn
Hangs out its crimson folds or spreads its lawn,
No more the fields and lofty coverts please,
Each hugs her own, and hastes to rolling seas.

The uniformity and power of this instinct are ·ongly set forth in the following extract:—" In the

beginning of June," says Crantz, "they come back, young and all, like a flock of sheep. They seem to observe a certain fixed time, and track, like the birds of passage, and take a route that is free from ice; therefore the ships from Spitzbergen can freely follow them. We can pretty well ascertain the day at the end of May when they will be again at Frederick Hope; and in the beginning of June at Good Hope, and so further north.*

Another interesting particular in regard to their migrations is, that, like some other migratory creatures, and more especially birds, they usually affect particular spots, where, having once been located, they will always in preference return, and will scarcely leave, though beset with many and great dangers. Thus in some desolate recess of the ocean, if fifty islets be grouped together in nearly apparent uniformity and sterility, it will often be found that the Seals habitually resort and crowd upon some two or three favoured ones, to the complete neglect of all the others. We do not venture to say that they, in their wisdom, have not some good reason for this, though hitherto it is unascertained. Occasionally it has been observed that in some of these resorts there is a stream of salubrious water, which, if not quite essential, is yet an object of first-rate importance to them, and possibly in every instance there is some equally satisfactory reason for their choice.

* Greenland, p. 129.

These immense herds are usually composed of one and the same species, though it sometimes happens even various genera resort to the same shore or island, and thus greatly increase the numbers of the assembled thousands. In this instance, however, each species generally keeps itself detached from the others; and knowing well its own strength or weakness, carefully avoids all circumstances which would lead to hostile encounters, so that they all live in proximity, without collision, if not in harmony and peace.

If we now proceed to examine the individual groups, we shall soon perceive that there are marked peculiarities presented by them respectively. This fact can be adequately illustrated only by a particular survey of each, such as we hope to supply in the body of the work; and in this place we can exhibit the fact only by a single statement respecting the Walrus, and some of the families of the larger Seals. The Walrus is *monogamous*, and, though associating in immense groups, yet generally is a peaceful and harmless creature, living in concord each with his fellows, and interfering but little with its congeners. When, however, they are attacked by foes, and more especially by man, their most cruel persecutor, then all the mutual kindness of their disposition is called forth; they readily defend and support each other; they fearlessly proceed to the rescue of their unfortunate associate, and will contend for his deliverance, to their own great detriment, and even to death. The Sea-Lion,

again, (*Otaria jubata*,) an animal of equal dimensions and power, is a *polygamist*, and exhibits in strong colours the penalty which naturally results from this characteristic. At a particular season of the year, every male, inflamed with lust, and jealous almost at his shadow, lords it over his numerous harem with even more than Eastern despotism, and thereby throws the whole community into a state of the highest excitement and agitation. During this period, which continues for months, many a jealous Bashaw, as these animals have not inaptly been designated, engages in fearful strife with a rival; the contest is often long and obstinate, as well as most sanguinary and fatal. Nor does it end with these doughty champions. Other males soon imagine that their interests are involved, or their rights invaded, and the strife spreads from family to family, till at length the whole community is involved in one general *melée* of passion and rage, of fierce cries and groans, of blood and death; and, after all, short is the triumph of the conqueror, and deep and poignant the chagrin and malice of the vanquished.

Originally, and therefore we are disposed to hold that naturally, these Amphibia, far from having a dread, have rather a reposing confidence in man. When a young one by any accident is separated from its parents, and comes in contact with man, instead of shunning it courts his company; it will follow him, and if the finger be held out, will suck it like many domestic animals. Through the kindness of Professor Trail, we can illustrate this trait in

their mental constitution, by an interesting incident of which he was a witness, and which, with several other anecdotes, we can, through his polite attention, record in his own words.—" A little islet in Orkney, called the *Holm of Papa Westray*, had long been a favourite haunt of numerous Seals, which had become more than usually tame from the care of the proprietor of the adjoining island to prevent their being molested. On visiting that gentleman in 1833, I found the Seals exhibited their wonted confidence in those who approached their protected haunt. Several of them swam along the shore as a party of six or eight persons walked along the beach, and did not in general keep farther from us than thirty or forty yards: when we turned, so did they, and when we re-entered our boat, they followed it in the narrow channel that divides Holm from the island of Papa. Seals are said to relish music, and a Seal-hunter once informed me that the sound of a flute will allure them to a boat: but in the above instance it was merely the consequence of no gun being ever lifted against them in that islet, which has won their confidence in man." Nor is this characteristic less strikingly exemplified by an observation made by Mr Dunbar, the present incumbent of the parish of Applegarth, during his residence, at a former period, in one of the Hebrides. In a letter to Mr Lizars, which appeared in the last volume of the Naturalist's Library, we find the following statement:—" While my pupils and I were bathing, which we often did, in the bosom of a

beautiful bay in the island, named, from the circumstance of its being a favourite haunt of the animal, Seal Bay, numbers of these creatures invariably made their appearance, especially if the weather was calm and sunny, and the sea smooth, crowding around us at the distance of a few yards, and looking as if they had some kind of notion that we were of the same species, or at least genus, with themselves. The gambols in the water of my playful companions, and their noise and merriment, seemed, to our imagination, to excite them, and to make them course round us with greater rapidity and animation. At the same time, the slightest attempt on our part to act on the offensive, by throwing at them a stone or shell, was the signal for their instantaneous disappearance, each, as it vanished, leaving the surface of the water beautifully figured with a wavy succession of concentric circles." Nor must it be supposed that it is only the inhabitants of these isles that are thus amiable; the same character belongs to some of their antipodes, as mentioned in the following statement of the missionary Cottaneo.* "Near the island of Lobos, in the river Plata, Sea-Wolves appear in vast multitudes; they meet the ship, and will even hang to the sides by their paws, and seem to stare at and admire the crew; they then drop off, and return to their haunts." And, once more, Weddell remarks,—"When we first visited South

* First Letter of the Missionaries of Paraguay, apud Pennant, Br. Quadrupeds.

Shetland, the Seals had no apprehension in meeting man."*

In the previous paragraph allusion is casually made to the notion that these animals are not indifferent to the charms of music; whilst we believe it may be safely affirmed that this assertion is more frequently made than credited. The statement, however, appears to be perfectly correct; and the following quotations, the former from the celebrated Orkney Naturalist, Low, and the latter from Mr Dunbar just quoted, are sufficient to banish all scepticism on the point. "If people are passing in boats, the Seals often come close up to them, and stare at them, following for a long time together; if people are speaking loud they seem to wonder what may be the matter. The church of Hoy is situated near a small sandy bay, much frequented by these creatures; and I observed, when the bell rang for Divine service, all the Seals within hearing swam directly for shore, and kept looking about them, as if surprised rather than frightened, and in this manner continued to wonder as long as the bell rang."* And again, Mr Lizars' correspondent,— "The fondness of these animals for musical sounds is a curious peculiarity in their nature, and has been to me often a subject of interest and amusement. During a residence of some years in one of the Hebrides, I had many opportunities of witnessing this peculiarity; and, in fact, could call forth its

* Fauna Orcadensis.

manifestation at pleasure. In walking along the shore in the calm of a summer afternoon, a few notes of my flute would bring half a score of them within thirty or forty yards of me; and there they would swim about, with their heads above water, like so many black dogs, evidently delighted with the sounds. For half an hour, or, indeed, for any length of time I chose, I could fix them to the spot; and when I moved along the water edge, they would follow me with eagerness, like the Dolphins who, it is said, attended Arion, as if anxious to prolong the enjoyment. I have frequently witnessed the same effect when out on a boat excursion. The sound of the flute, or of a common fife, blown by one of the boatmen, was no sooner heard, than half a dozen would start up within a few yards, wheeling round us as long as the music played, and disappearing, one after another, when it ceased."*

But, however much these Amphibia may naturally feel disposed to repose confidence in man, yet, if exposed to bad treatment, they soon acquire the habit of suspecting and shunning him, and of counteracting the danger resulting from his wiles. Their thus learning caution from experience will be frequently illustrated in the sequel; while in other instances it would appear that their watchfulness, if not a natural instinct, is a precaution which has become perfectly habitual to them. Denis says, the Seals in landing always place a sentinel; and Scoresby states, they are extremely watch-

* Nat. Lib. vii. p. 204.

ful. "Where a number are collected on the same piece of ice, one if not more is always looking round; and even a solitary Seal is scarcely ever observed to allow a moment to pass without lifting its head. He adds, where Seals rest on an extensive sheet of ice, they always secure their retreat either by lying near the edge, or by keeping a hole in the ice always open before them. These precautions are necessary to prevent them becoming a prey to the Bear. The old animals are in general shy; so that, when thousands are seen within the compass of a square furlong, on the approach of a boat, the whole will perhaps make their escape. The young ones are less guarded, and when met with at the proper season, may sometimes be killed by the dozen at a time, on a small flake of ice."*

But not only do these Amphibia quickly learn the most watchful circumspection; it is moreover true, that, when surprised by man, and forced to engage in actual combat, though never the aggressors, many of them, for it is quite the reverse with others, show the coolest and most determined courage. This is amply illustrated in the following pages, and especially with regard to the Sea-Horse. To excite attention merely to the point, we shall here introduce a sketch from the great painter of Nature of our time, who probably narrated only what had actually come within his cognisance. "The Seal, finding her retreat intercepted by the light-footed soldier, confronted him manfully, and having

* Loc. cit. 511.

sustained a heavy blow without injury, she knitted her brows, as is the fashion of the animal when incensed, and making use at once of her fore-paws, and her unwieldy strength, wrenched the weapon out of the assailant's hand, overturned him on the sands, and scuttled away into the sea without doing him any further injury. The captain, a good deal out of countenance at the issue of his exploit, just rose in time to receive the ironical congratulations of his uncle, upon a single combat, worthy to be commemorated by Ossian himself.—'Since,' said the Antiquary, 'your magnanimous opponent hath fled—from the foe that was low.' In truth, she walloped away with all the grace of triumph, and has carried my stick off also, by way of *spolia opima*."

When the animal has been captured, and is forced to remain on land, there is the greatest contrast presented to all this activity and sagacity. To such an extent is this the case, that it suggests the idea that sometimes they are almost in the drowsy state of hybernating animals. Buffon remarks of the Monachus which he examined, "It slept frequently during the day, snoring so loud that it was heard at a considerable distance. When asleep it could be roused only with difficulty; and when drowsy, would not promptly attend to his master." And to come to an authority, whose loss Zoologists have lately been called to deplore,*—"They have a great tendency to repose; sleep

* M. Fr. Cuvier.

throughout the live-long night, and during the day cannot be kept awake without unceasing perseverance."

It is frequently stated in general terms, that Seals are easily tamed; but this assertion must be taken with limitation, since, though true of some, it is equally untrue of others. The fact is, Seals differ as much in disposition as in form; and as with dogs and other animals, whilst some species are easily and almost naturally domesticated, others as uniformly show themselves fierce, savage, and suspicious. Some of the more common species, however, are not only easily tamed, but become the attached and almost the amusing companions of man. Many instances of this will be found in the following pages; and frequently are they carried from city to city, not only that their peculiar structure may be seen, but that their intelligence and acquirements may be exhibited. All who have come into contact, or taken trouble with these animals, are familiar with these facts, so that we shall here subjoin but one or two statements concerning it. Thus Pliny,—"Vituli marini accipiunt disciplinam, voceque paritur et visu populum salutant: inconditu fremitu nomine vocatu respondent."* "I have lately," says M. F. Cuvier, "had occasion to witness a Seal which displayed much intellectual power. He did punctually what he was ordered. If desired to raise himself on his hind-legs, and to take a staff in his hands, and act the sentinel, he did

* Hist. Nat. Lib. ix. Cap. 13.

so: he likewise, at his keeper's bidding, would lie down on his *right* side, or on his *left*, and would tumble head over heels. He would give you either of his paws when desired, and would extend his sweet lips to favour you with a kiss. He complied immediately with the wishes of his master, to whom he appeared to be peculiarly attached."* And once more, to quote the lively and intelligent Dr Hibbert:—"The Phrenologists, from the form of the cranium, have hazarded the opinion that the Seal is possessed of uncommon intelligence. I am confirmed in the same notion from a different kind of observation. These animals, if taken young, are easily domesticated, when they assume the habits of a dog, showing attachment to particular individuals of the human race, repairing to the water in quest of fish, and returning to the roof where they have experienced kindness."

Before proceeding to make the few remarks which our limits allow, on the valuable products derived from these animals, we would say a word or two upon their capture. They are exceedingly tenacious of life, and many cruelties have been perpetrated upon them, which most who have witnessed declare to be too horrible for description, and over which we willingly draw a veil. If life is to be sacrificed, there is a right way of taking it as well as a wrong, and we insist that the former should be followed, and the latter avoided. Before, however, enter-

* Mammifères Livrais. Mai. 1824.

ing upon this topic, we take leave to remark, that it is impossible to investigate as we have done the natural history of these animals, without discovering how much their capture has been made a matter of mere amusement, and, as it is familiarly, but emphatically, called, of *sport*. We venture to denounce all such sports as both indefensible and wrong. Animals have been given to provide for the necessities and comforts of man, but not that he may gratify himself with their dying agonies: and he is wholly inexcusable if even here he breaks the golden rule of doing as he would be done by. Sporting with the feelings, and pains, and lives of these creatures, has a strong tendency to lead to cruelty and wickedness; and, therefore, this inherent tendency should be checked in the bud, and invariably opposed. When we witness, says Peron, a thoughtless sailor hastening for his amusement, club in hand, into the midst of a great herd, and surrounding himself with their dead bodies, we cannot but sigh over this improvidence and cruelty, which lays low so many peaceful, gentle, and unhappy beings.

When still within their proper bounds,
And guiltless of offence, they range the air,
Or take their pastime in the spacious waste,
There they are privileged; and he that hunts
Or harms them there is guilty of a wrong,
Disturbs th' economy of Nature's realm,
Who, when she formed, designed them an abode,
Distinguished much by reason, and still more
By our capacity of grace Divine,
From creatures that exist but for our sake,

Which, having served us, perish, we are held
Accountable; and God some future day
Will reckon with us roundly for the abuse
Of what He deems no mean or trivial trust.

ne instances will be recorded in the following of the awkwardness and difficulty which was experienced in putting a speedy end to the sufferings of these poor animals. We shall here quote but one example: "We had many battles," says Byron, "with these Amphibious creatures, the killing of one of which was frequently an hour's work for six men." It is of this same animal that Weddell says, it is now to one man, acquainted with the practice, the work of three minutes; but without stabbing it to the heart, or fracturing its skull, the feat is truly difficult. By the regular fishers a lance of 12 or 15 feet is used for the larger species, the blade of which is about two feet long. With great address they seize the moment when the animal raises his left fore-paw to advance, and plunge their weapon to the heart. And so Scoresby,—"The capturing of a Seal is but the work of a moment. A blow with a *Seal-club* (a representation of which we here supply) on the nose immediately stuns it, and affords opportunity of arresting the flight, and making prize of many at a

time." The existence of this tender point was well known to the ancients, and is thus expressed by Oppian:—

> Non hami penetrant phocas, sævique tridentes
> In caput incutient, et circum tempora pulsant.
> Nam subita percunt capitis per vulnera morte.

When Seals are observed to be making their escape into the water, before a boat reaches the ice, the sailors give a loud continued shout, on which their victims are sometimes deluded by the amazement of a sound so uncommon, and delay their retreat until arrested by the fatal blows of their enemies.

Such are the expedients had recourse to among civilized nations; and we shall now advert shortly to the methods practised by the rude tribes in the neighbourhood of the pole.

The Greenlanders have three ways of catching Seals; either individually, each in "his bubble of a boat;" or in company, by the *Clapper-hunt;* or in winter on the ice. As the first method is chiefly practised against that one which is styled the Greenland-Seal, we shall postpone its description till we come to the account of that animal. The other methods are practised indifferently against all kinds of Seals. The *Clapper-hunt,* as it is called, is prosecuted by numbers in concert. As the natives are ever on the watch, so soon as they discover a herd, driven, usually by stormy weather, into some

creek or inlet, they endeavour to cut off their retreat, and frighten them under water by shouting, clapping, and throwing stones. As, however, they must speedily come to the surface to respire, "they persecute them again till they are tired, and at last are obliged to stay so long above water, that they are surrounded and killed by long and short lances. During this hunt we have a fine opportunity of seeing the agility of the Greenlanders, or, if I may call it so, their hussar manœuvres. When the Seal rises out of the water, they all fly upon him as if they had wings, with a desperate noise; the poor creature is forced to dive again directly, and the moment he does, they disperse again as fast as they came, and every one gives heed to his post, to see where it will start up again, which is an uncertain thing, and commonly three-fourths of a mile from the former spot. If the Seal has a good broad water, three or four leagues each way, it can keep the sportsmen in play a couple of hours before it is so spent that they can surround and kill it. If in its fright it retreats to land, it is welcomed with sticks and stones by the women and children, and presently pursued by the men in the rear."*

Several methods are taken to kill Seals on the ice. As they frequently themselves make apertures

* Crantz. Greenland.

in the ice for breathing, the Greenlander seats himself on a stool, putting his feet on a board, to



keep them from the cold. "Now when the Seal comes and puts its nose at the hole, he pierces it instantly with his harpoon, then breaks the hole larger, and draws it out, and kills it quite. Sometimes, again, if the Greenlander sees a Seal lying near its hole upon the ice, he slides along on his belly towards it, wags his head, and grunts like a Seal, and the poor animal, thinking it is one of its innocent companions, lets him come near enough to pierce it with his long lance." A third device will be found, from Pallas's Travels, in our account of the *Hare of the Sea*, or *Leporine Seal;* and the only other method we shall particularize is that mentioned on the same authority, as practised in Lake Baikal:—"At Zivovia we met a number of individuals going a Seal-hunting. This fishery is farmed out, and

is pursued chiefly in April. The Seals congregate in numbers in winter in the neighbourhood of rapid rivers and hot springs, where the ice is broken, to which spots they resort, and bask or sleep in the sun. The hunters are quite familiar with these places, and put themselves into slight sledges, on which they hoist a white sail. The Seals, taking this for a floating island of ice, are not alarmed, and approach. They are thus surprised and shot, and many are captured."*

While man is thus the greatest, and, we fear, often the cruelest, enemy of these Amphibia, it is not to be forgotten that he is not the only one. On land their chief foes, and especially of the Walrus, are the Polar Bears; and between these animals there are often dreadful contests; the Walrus being usually victorious, at the same time carrying away many fearful scars, the tokens of his triumph. In the ocean many of the more formidable species of Whales are ever making bloody and successful war against all kinds of Seals. The following curious information is given by Peron respecting the Great Sea-Elephant: "The fishers state that they sometimes see these Seals ascend from beneath the wave in the greatest apparent alarm, many of them covered with wounds, and dyeing the water with their blood. Their panic concurs with their wounds in proving that they have been hunted by some formidable foes. The fishers unanimously agree that they know no animal which

* Voyag. de Pallas, t. iv. 136.

could make such formidable wounds, and therefore presume that these monsters dwell far from the coasts; whilst they at the same time allow that they have not otherwise been able to detect any trace of them." Nearer home, they have similar enemies, and we are happy here to add a valuable note from Dr Trail's manuscript:—"In 1833, I inquired for my old acquaintances the Seals of the Holm of Papa Westray, and was informed that, about four years before, they had totally deserted the island, and had only within the last few months begun to reappear. The seeming cause of this migration was the attacks of some powerful ravenous inhabitant of the ocean. My friend informed me that in 1828 or 1829, he had found the bodies of more than a dozen of Seals completely divided through the middle, as if by a bite, drifted on shore. It was almost in every instance the portion next the tail that was found, and the appearance of these fragments showed that the body of the animal had been cleanly cut through, as if by the single stroke of the monstrous jaws of some species of shark." It has, moreover, been observed that these creatures are subject to very fatal epidemics. "About fifty years ago, multitudes of their carcases were cast ashore in every bay in the north of Scotland, Orkney, and Shetland, and numbers were found at sea in a sickly state."*

Without in the slightest degree depreciating the

* Fleming, Brit. An. p. 17.

products of these animals, which have become regular articles of commerce, and contribute to the elegancies and refinement of polished society, it is yet interesting to reflect that they are even still more essential to those hardy tribes of our fellow-men who spend their fleeting and chequered day within the limits of the Arctic Zone. To them they are indispensable, for the sea is their corn-field, and the Seal-fishery their most copious harvest. "Seals," says Crantz, "are more needful to them than sheep are to us, though they supply us with food and raiment, or than the cocoa-tree to the Indian, although it presents him with meat and clothing, houses, and ships; so that in case of necessity they could live upon them alone. The Seal's flesh supplies them with palatable and substantial food; the fat is sauce to their other aliment, and furnishes them with oil for light and fire, while at the same time it contributes to their wealth in every form, seeing that they barter it for all kinds of necessaries. They sew better with the fibres of Seal's sinews than with thread or silk; of the fine internal membranes they make their body raiment, and their windows; of the skins they make their buoys, so much used in fishing, and many domestic utensils, and, of the coarser kinds, their tents, and their boats of all sizes, in which they voyage and seek provisions; therefore," continues Crantz, "no man can pass for a right Greenlander who cannot catch Seals. This is the ultimate end they aspire at in all their device and labour from their childhood up. It is the only art,

and in truth it is a difficult and dangerous one, to which they are trained from their infancy, by which they maintain themselves, make themselves agreeable to others, and become beneficial members of society." Concerning the Southern hemisphere, a recent voyager tells us, that the inhabitants of Terra del Fuego are very expert at cutting the blubber from Seals, and not less so at stealing and eating it.

So much for the opinions entertained by the inhabitants of the Polar regions regarding the Seals as an article of food. A corresponding estimate is made of the herbivorous Cete all the world over. Wherever they are found, whether in the West Indies or the East, in Africa or America, they are considered as probably superior to any other kind of animal food. The prevalence and grounds of this opinion will be stated in a subsequent part of this volume.

No products of the Amphibia, however, are, upon the whole, more valuable than the oil and skins. The *oil* obtained both from the Walrus and Seals is of a quality superior to that of the Common Whale, and brings a higher price. It yields oil, says Scoresby, speaking of the Sea-Horse, which, when extracted before putrefaction has commenced, is beautifully transparent in its appearance, free from smell, and not unpleasant to the taste. Soon after Captain Cook's voyage, in the Resolution, in 1771, he presented an official report concerning New Georgia, in which he gave an account of the great

number of Proboscis Seals and Fur Seals which he had found on the shores of that island. This induced several enterprising merchants to fit out vessels to take them, the former for their oil, the latter for their skins. Captain Weddell states that he had been credibly informed, that during a period of about fifty years not less than 20,000 tons of oil were procured annually from this spot alone for the London market; a quantity which, at a moderate price, would yield about L.1,000,000 a year.

The skins, as we have seen, are very much used in their raw state as articles of apparel by the natives of the Polar Zones. When tanned, they use them extensively in making shoes; and the Esquimaux have a process by which they render them waterproof; so that, according to Scoresby, the jackets and trousers made of them by these people are in great request among the whale-fishers, for preserving them from oil and wet. But the skins are not only used in this raw and tanned state as leather; on account of their silky and downy covering, they constitute still more important articles connected with the fur trade. Thus considered, Seals' skins are evidently of two kinds, which may be distinguished as *hair*-skins and *fur*-skins. The former are used for clothing and ornament by the Russians, Chinese, and other nations, and the latter yield a fur which, we believe, exceeds in value all others which have been brought into the market. Many Seals supply nothing but hair, whilst others, in different proportions, produce both the hair, and un-

derneath it a soft and downy fur. The majority, we believe, are to be considered merely as hair-skins, similar to the bear or sable; and of these some are excellent of their kind, and are much prized.

But the finest of the hair-Seal-skins yields in value and importance to the other variety, the fur-Seal-skin. This fact is thus alluded to in the last edition of the Encyclopædia Britannica:—"From about the year 1806 till 1823, an extensive trade was carried on in the South Seas in procuring Seal-skins, which in that part of the world are covered with a fine fur. These were obtained in vast abundance by the first traders, and yielded a very large profit." The remark we have just made that hair and fur are frequently both present, is as applicable to the fur-Seals, as to the others. But the question here occurs, which are the fur-Seals? and that intelligent mariner we have so often quoted, and who was so largely engaged in this trade, declares that Naturalists know nothing about it. Mr Weddell invariably speaks of the fur-Seal as one species (the Falklandica) distinct from all others. He remarks,—"The circumstance of its possessing a valuable fur has not been noticed in any description of the Seal with which I have met," (pp. 137, 142.) We have probably, on this point, made a somewhat more extended survey of the works of Naturalists than this intrepid sailor could do, and our examination quite corroborates his. We have not discovered

or any other species, has been distinguished

for the peculiar excellency of its fur; and for more ample details on this point we refer our readers to our chapter upon the Otaria Falklandica, and also to a more extended paper on the subject which will be found elsewhere ;* simply remarking, that it is a matter of considerable national importance. The time was when cargoes of those skins yielded five or six dollars a piece in China; and the present price in the English market averages from 30 to 50 shillings† per skin. The number of skins brought off from Georgia cannot be estimated at fewer than 1,200,000; the Island of Desolation has been equally productive; and in addition to the vast sums of money which these creatures have yielded, it is calculated that several thousand tons of shipping have annually been employed in the traffic.‡

But whilst we indulge the hope that we may have done some little service by exciting attention to the source of this fur, and publishing the first representation of the animal which yields it, that has, as such, seen the light, yet we are far from being satisfied that much does not still remain to be done. It is a curious fact, that whilst the Americans were for many years most successfully prosecuting this trade, England was not profiting by it, and though quantities of the fur-Seal-skin were brought home, "the furriers in England had not the method of dress-

* See Annals of Natural History, No. for October 1838, Vol. II. 81.

† Encyclop. Brit. Last Edit. vol. x. p. 264.

‡ Weddell, 54.

ing them; on which account they were of so little value as to be almost neglected."* Now, the inquiry here suggests itself,—If there was a time when our artizans could not, and did not, dress this skin when put into their hands, and when Naturalists knew little or nothing specifically about the true fur-Seal, may it not happen that there are other Seals whose fur is really as valuable, and which might now be turned to a similar profit? In our account of the Falklandica, we have given a description of the method by which the fur-Seal-skin is prepared, apparently sufficiently simple; and we have, moreover, given the opinion of an eminent Naturalist, (an opinion in which we could not concur,) that the Ursine Seal is the true source whence this valuable product is derived. But be this as it may, the following statements should not be overlooked, viz. "That the Americans regard many Seals as fur-Seals, which are unknown to Naturalists, and quite distinct. Thus, according to them, the fur-Seal of Patagonia has a bump behind its head; that of California is of very large dimensions; the Upland Seal, or that which retreats far from shore, is small, and exclusively inhabits the Macquarrie Islands and Pennantipodes; and, finally, that of the South of New Zealand has other and distinct characters."† The truth then may be, that many Seals produce, in high perfection, that article which is

* Weddell, 53.
† Lesson, in Dict. Class. t. xiii.

now so much desiderated, and would yield so rich a return.

It may be considered superfluous to read a lecture to the trader upon a matter so nearly touching his own interest; and yet at the same time there is one point which forms so essential a part of our subject, that we cannot withhold a word or two. These valuable creatures have often been found frequenting some sterile islands in innumerable multitudes. By way of illustration, we shall refer only to the Fur-Seal, as occurring in South Shetland. On this barren spot their numbers were such that it has been estimated that it could have continued permanently to furnish a return of 100,000 furs a year; which, to say nothing of the public benefit, would have yielded annually, from this spot alone, a very handsome sum to the adventurers. But what do these men do? In two short years, 1821-2, so great is the rush, that they destroy 320,000. They killed all, and spared none The moment an animal landed, though big with young, it was destroyed. Those on shore were likewise immediately despatched, though the cubs were but a day old. These of course all died, their number, at the lowest calculation, exceeding 100,000. No wonder, then, that at the end of the second year the animals in this locality were nearly extinct. So is it, we add, in other localities, and so with other Seals; so with the Oil-Seals, and so with the Whale itself, every addition only making bad worse. And all this might easily

be prevented by a little less barbarous and revolting cruelty, and a little more *enlightened* selfishness. Fishermen are by law restrained as to the size of the meshes of their net in taking many of our more valuable fish; and in the Island of Lobos, in the River Plata, where, as we have seen, there are quantities of Seals, their extermination is prevented by the Governor of Monte Video, who farms out the trade under the restriction that the hunters shall not take them but at stated periods, ages, &c. We could enlarge on this point, but our exhausted space forbids.

The *Seal-fishing* in the Northern hemisphere has never been prosecuted with any energy by the British. The ships which are fitted out for the Whale-fishery occasionally obtain from 2000 to 3000 Seals, and sometimes more, and vessels sent out for the Seal-fishery alone, and which seldom amount to more than one or two annually, have occasionally procured a cargo of 4000 or 5000, yielding nearly 100 tons of oil.* From the Northern parts of Europe, however, and more especially from the Elbe and Weser, there are frequently upwards of fifty sail despatched. In a good Sealing year the number captured off the coasts of Newfoundland has amounted to many hundreds of thousands. The trade is one of much hazard, and leads to

* By a newspaper paragraph, (July 1838,) we perceive that nine vessels were this season employed on the Greenland Seal-fishing; they procured about twenty Whales, and nearly 40,000 Seals. Most of the vessels belonged to Scotland, and more especially to Peterhead.

perils and adventures not less disastrous and exciting than the Whale-fishery itself. But on these we must not dwell.

With regard to the Seal-fishery of the South, the English and Americans have exclusively divided it between them, and with very great profits. It has lately been stated that they together employ not fewer than sixty vessels in the trade, of from 250 to 300 tons burden. These vessels are strongly built, and have each six boats, like those of the whalers, together with a small vessel of forty tons, which is put in requisition when they reach the scene of their operations. The crew consists of about twenty-four hands; their object frequently being to select a certain fixed locality, from which they make their various *battues*. Thus it is very common for the ship to be moored in some secure bay, and to be partially unrigged, whilst, at the same time, the furnaces, &c. required for making the oil, are placed on shore. The little cutter is then rigged and manned with about half the crew, who sail about the neighbouring islands, and send a few hands on shore when they see Seals, or where they wish to watch for them. This vessel can hold about 200 Seals, rudely cut up, which will yield about 100 barrels of oil: this is transported to head-quarters and melted. The campaign frequently lasts for three years, and in the midst of unheard-of privations and dangers. Some of the crew are sometimes left on distant barren spots, and the others being driven off by storms, they are

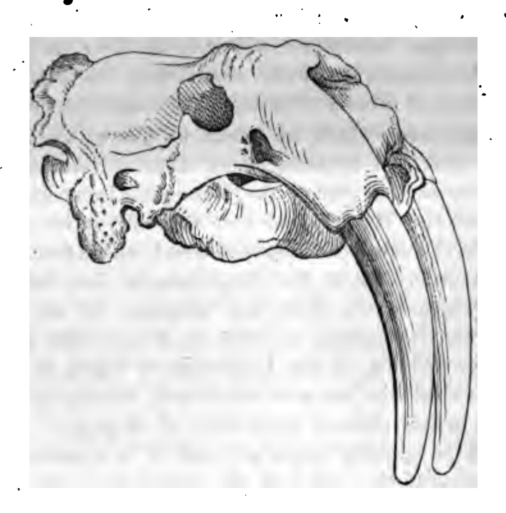
left to perish, or drag out for years a most precarious and wretched existence.

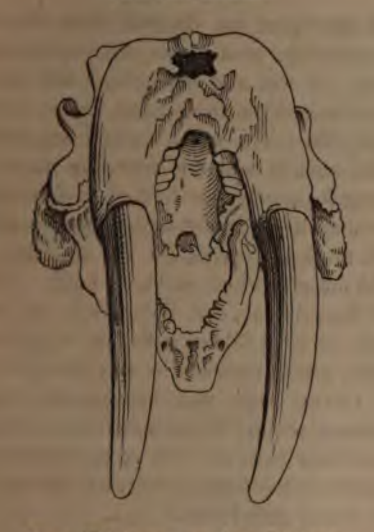
On the subject of *classification* we mean not to enter into any extended statements. The *Amphibious* is the third tribe, of the third family, *Carnivora*, of the third order *Carnassiers* of Baron Cuvier; and comprehends the Walrus and the Seals, a very natural group, which has been designated the Phocacious group, or the *Phocacea*. Originally all the Seals were included under one genus; but as their number, and ascertained differences, increased, it was suggested by Buffon that they should be divided into two groups; it having been observed that some of them had no external ears, whilst others were possessed of these appendages. Peron carried this suggestion into execution, and proposed the term *Otary* for the latter division, in which he has been followed by most Naturalists, and amongst others by Baron Cuvier, who remarks—"The Otaries of Peron differ in several particulars from the Seals properly so called, independently of the small conchæ at their ears." This distinction accordingly will be observed in the following pages. M. F. Cuvier, after having very carefully re-examined the group, and finding some marked differences in the dental apparatus, proposed a new arrangement, grounded mainly thereupon. He demonstrated that the Seals may be divided into many generic groups, characterized by organic modifications, not less marked than those which distinguish the most natural genera; and added,

that their common characters elevate them into the rank of an order, according to the prevailing principles of classification. "Far," says he, "from forming only one natural genus, they constitute a distinct order, which is composed of many genera, which comprehend numerous species."* We estimate highly the value of M. Cuvier's labours in this department, and believe that he pushed his discoveries as far as it was possible at the time. We think his arrangement will probably be adopted, and, accordingly, after the example furnished by the Règne Animal, we will indicate it as we proceed, without, however, abandoning the simpler division of Peron. Having thus stated the simple arrangement which we mean to follow, we may now add, that Dumeril places these animals in his last family but one of the Mammalia, immediately before the Whales, and that Latreille, in his *Familles Naturelles du Règne Animal*, makes them his fifth order, that of the Amphibia, the first family of which is the Seals and Otaries. Of all our modern Naturalists, however, we believe that Professor Nilsson, of the University of Lund, is the individual who has most assiduously devoted attention to this difficult department of Zoology. His work is speedily expected; and it is confidently anticipated that much of the doubt and confusion which still envelope the subject will then be removed. We regret that we have not been able to

* Mammifères, 1824.

avail ourselves of his valuable researches, as our task would thus have been greatly facilitated, and our treatise rendered more valuable and complete. Along with this regret, however, we are unwilling to forego the hope that our protracted and independent, though feeble efforts, have thereby been rendered additionally productive, and that we have thus been enabled to contribute more to enhance the interest, and elucidate the difficulties, of the subject.



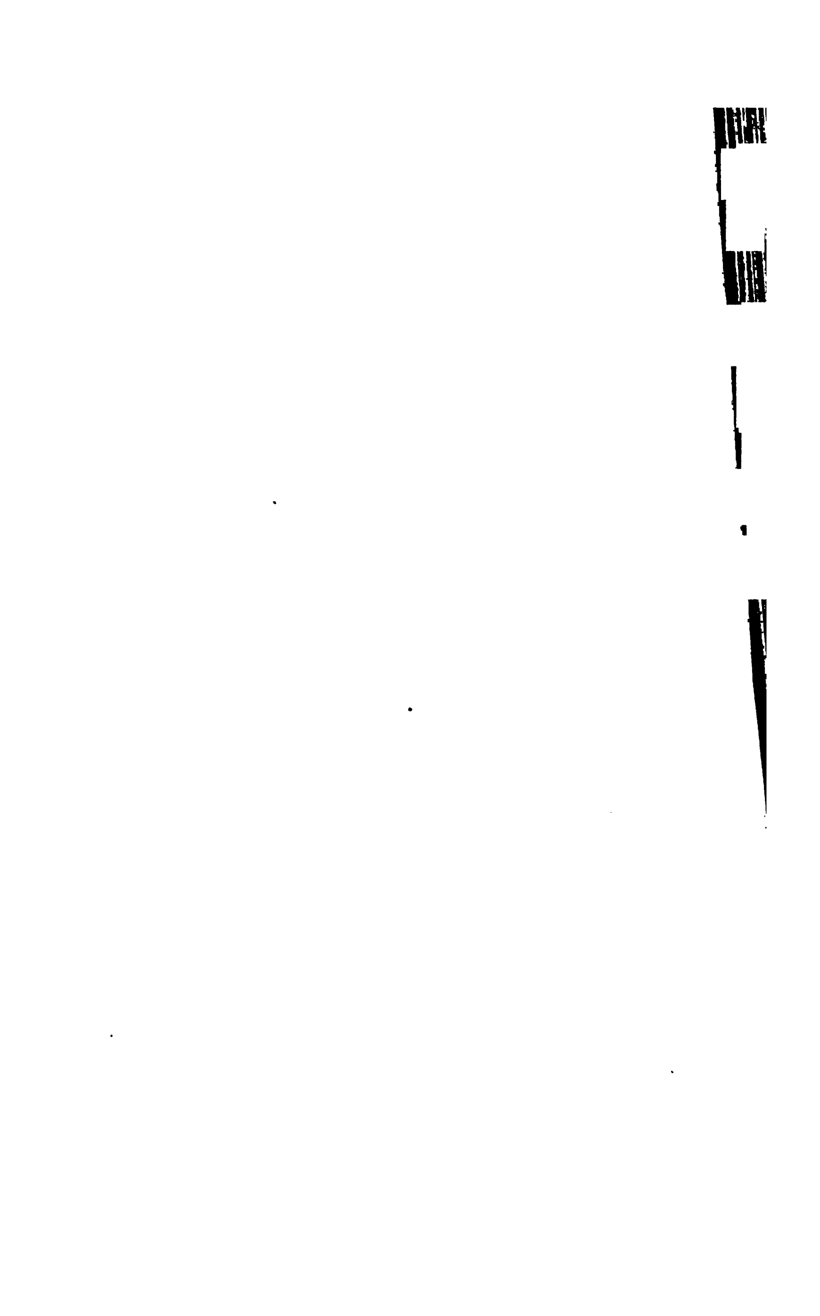


THE WALRUS, OR SEA-HORSE.

We commence our account of the group of the Amphibia with that animal, which, though neither the largest, nor perhaps the most remarkable, yet cannot be regarded without wonder and astonishment. Its cranium is quite unique; and as this remarkable portion of the Osteology, including the dental apparatus, has received great prominence in the classification of its congeners, we prefix representations originally published by Daubenton, and on which little need be said. It represents the peculiar shape of the head, the most remarkable part of the animal. It will at once be observed, that the strange

shape of the upper jaw depends upon the sockets, which receive the great tusks, and remind us of the Elephant. It will also be noticed, that the lower jaw shuts in between these tusks, and so rests upon the upper one. The great sockets are placed between the nostrils and the orbit, the rim of which is wanting for nearly one-third of its circumference. The cranium itself is not large; but its processes are well marked, serving for the insertion of the powerful muscles which move the head. The position of the grinders, and their shape, are here also seen, four on each side of each jaw, which, with the two tusks, makes eighteen in all; the grinders are small. Cuvier adds, that between the tusks are two incisors, shaped like molars, which the generality of writers have not yet recognised to be incisors; between these again are two small and pointed ones in young individuals.*

* In the preceding volume of the Naturalist's Library, (Mam. v. 7th,) our friend Mr MacGillivray having supplied, from the cranium of a young Walrus, in the Museum of the Royal College of Surgeons, the first published description of the normal dentition of this animal, we subjoin it. In the skull of the young, there are in the upper jaw three incisors on each side; the first or inner extremely small, the second a little larger, and the third or outer disproportionately large, being equal to the largest grinders. The canine tooth is displaced, being thrust outwards beyond the line of the other teeth; there are then five grinders, with single roots, the fifth very small. In the lower jaw there are two very small incisors on each side, the canine is wanting, and five grinders. In adults, the incisors are obliterated, except the lateral pair of the upper jaw; the fifth grinder also disappears, and sometimes the fourth.





THE WALRUS OR SEA-HORSE.
Edin? Roy. Mus.
North Seas.

THE WALRUS, OR SEA-HORSE.

Trichechus.—LINN.

PLATE I.

Trichechus, Linn. *Trich. Rosmarus*, Gmel. *Equus Marinus*, Ray. *Morse* of the Russians. *Bête à la grande dent*, of the French. *Walros*, Egede, Crantz, Anderson. *Walrus*, Pennant, Scoresby, &c. *Sea-Horse* of the Whale-fishers, and sometimes *Sea-Cow*.

IT has been well remarked, that the Walrus forms a connecting link between the Mammalia of the land and those of the water, corresponding in some of its characters both with the Bullock and the Whale. It is often seen of the size of a great Ox, and sometimes exceeds the dimensions of the gigantic Elephant. Its distinguishing characters are accurately and beautifully represented in the accompanying plate, taken from a specimen in the Edinburgh Royal Museum, as perfect a one perhaps as is to be found in Europe. The head, well proportioned to the body, is round and obtuse; the

eyes are small and brilliant; there are no external ears, and the orifice is placed far back on the head; the nostrils are large, somewhat round, and placed on the upper part of the snout. The most remark- e feature, however, in its countenance is its great muzzle, produced by the bony structure being ac- commodated for the reception of the tusks; these project from eighteen inches to two feet, and diverge at their points. The lips are remarkably thick, and are covered with great pellucid bristles as big as a straw. The neck is short; the body, very bulky, is broadest round the chest, and diminishes towards the tail, which is very short. As a defence against the extreme cold, these animals have a hide that is from an inch to two inches thick, covered with close hair; and they likewise possess, like the Whale tribe, a coating of oily fat, with which their bodies are completely enveloped. Thus incased, they descend to the depths of the Arctic Seas, and repose upon their icy beds without inconvenience. The colour, according to Fabricius, varies with the age; the young are black; they then become brown, and gradually more and more pale, till in old age they become quite white. Their limbs are short, and of an intermediate character between fins and legs; the inside of their paws are defended by a rough horny kind of coating, a quarter of an inch thick, which is probably produced by the hardening of the skin in consequence of the coarse usage they receive in climbing over the ice and rocks. The fore-paws, which are

a kind of webbed hand, are two-sevenths of the whole length of the animal from the snout; they are from two to three feet in length, and being expansive, they can be stretched to a considerable width. The hind-feet extend straight backwards, and together form a sort of tail fin; they are not, however, united, but are quite distinct from each other; their length approximates to that of the fore-paws, and the termination of all the fingers and toes is marked by a small nail.

The common dimensions of the Sea-Horse are from twelve to fifteen feet in length, with a circumference of eight or ten. Crantz states that it reaches a magnitude of eighteen feet in length, and nearly as much in circumference; and Baron Cuvier states that it exceeds the bulk of the largest bulls, and attains a length of twenty feet.* The length of the tusks when cut out of the skull is commonly from fifteen to twenty inches, though they are sometimes almost thirty; and their weight is from five to ten pounds, though it is noted that they have sometimes been found the double of this on the shores of the Icy Sea. They are not only useful to the animal in procuring its food, but also as a weapon against its foes, of which the Bear on land, and the Sword-fish at sea, are amongst the most nimble and fierce; they are also employed in enabling the animal to raise its unwieldy bulk upon the ice, when its access to the shore is prevented.

* Règne Animal, edit. 1829.



Though we have been somewhat full in our description, yet we do not deem it superfluous to append a few sentences from the racy account of the Missionary Crantz.—" The head is oval, but the mouth so small that I could not quite put my fist into it. On both its lips, and on each side of the nose, is a kind of fungous skin, a hand's breadth, stuck with a plantation of monstrous bristles, that are a good span long, and as thick as a straw; they are like a three stranded cord, pellucid, and give to the animal a majestic though a grim aspect. The nose is very little raised, and the eye is not larger than an Ox's. I could perceive no eye-lid, and as I was at first searching for the eye and temples, a Greenland boy pressed the skin, and out sprang

the eyes; so that I found I could squeeze them in and out the depth of an inch; from whence I might conclude that this creature had also a shelter for its eyes in stormy weather by drawing them into a safe repository. I could scarce find the little apparatus of the ears. Having no sharp incisors, it cannot catch fish and chew them like the Seals; and the two long tusks or horns growing out of its face over the nose, and bending down over its mouth, so as almost to barricade it up, seem to be more an impediment than a help to it. The right tusk was about an inch longer than the left, and its whole length was twenty-seven inches; they stand about three inches asunder in the head, and nine at the extremities."

As we have no where noticed any differences pointed out between the male and female, it is probable that they are not considerable. The latter have four mammæ, which are ventral; and they usually bring forth one, though sometimes two at a birth. Dr Shaw in his Zoology has figured two species of this animal, and inferred their existence principally from the differences in the representations given by Johnston and Captain Cook. Whilst we do not venture to deny that there may be two varieties, yet as nothing like sufficient proof has hitherto been afforded, we shall prosecute the subject as if there were but one.

In the very young, the tusks are not protruded, and we regret that we cannot specify the period of their appearing. Some Naturalists have thrown out the

idea that the old occasionally shed their teeth: of this opinion we have seen no confirmation, although it has been stated that many full grown animals have rather short teeth, and some are seén with only one; which, however, is satisfactorily accounted for from the many accidents to which they are exposed. Previous to the development of the tusks, their physiognomy is of course very different from what it subsequently becomes; and it is under these circumstances that, their countenances having a distant resemblance to the human, they have sometimes been mistaken for men, and have thus frequently given origin to the story of the merman or mermaid. This occurs the more readily, as these animals, as well as the other Amphibia, and all the aquatic Mammalia, are in the habit of rearing their heads above the water, and attentively gazing around upon ships, or any other passing object. Accordingly, we find Mr Scoresby expressly mentioning, "I have myself seen a Sea-Horse in this position, and under such circumstances that it required little stretch of imagination to mistake it for a human being. So like, indeed, was it, that the surgeon of the ship actually reported to me his having seen a man with his head just appearing above the surface of the water." *

With the forms which we have now described, and more especially after the details previously given, it will readily be understood that the Sea-

* Lib. cit. i. 504.

Horses are adapted in very different degrees for land and water. The latter unquestionably is their more common, as well as more natural, element: for it all their organs are beautifully adapted; and, when in the liquid wave, all their members have free scope, and work to the admiration of those who behold them. Whether descending into the depths of the sea, or swimming along its surface, their members are perfectly suited for their exigencies, and hence we find Zorgdrager stating, "That it is as difficult to follow the Morse with boats in rowing, as it is to follow the Whale itself;" implying, we need scarcely add, a great velocity in their course: and again, when quiet, so much are they at their ease that they sleep profoundly upon the surface, and, according to Schreber, are carried along as if they were dead. Upon the land, on the other hand, they are in a strained and far less favourable condition; while at the same time it must be remembered, that this sojourn is absolutely requisite, as it is on land that they form their lair, like other quadrupeds, and carry on the process of lactation. Their swimming paws, so admirably adapted for the water, are but ill suited for the land; and, though they make use of them for necessary transport, the operation is both awkward and irksome; "their gait," says Martens, "is a kind of jerking; they can make considerable springs, and can advance pretty rapidly, with the help of their teeth. When they continue on land, they appear, however, and really, to a great degree, are necessarily, sluggish brutes."

Another important consequence of their resort to land is their being deprived, in a great degree, of their ordinary food; some have gone so far as to say of all food; and that not only during their more protracted confinements, but at all times when they leave the sea, and come ashore, whether it be for days or weeks. Thus Lord Shuldham, in his interesting account of the Walrus, as observed in the Gulf of St Lawrence, states, that they are in the habit of crawling up to the shore, in a convenient landing place, and of remaining sometimes fourteen days together without food, when the weather is fair; but on the first appearance of rain they retreat to the water with great precipitation;* and Buffon observes he eats none upon land, which obliges him to return to the sea in quest of food. The reader is already aware that this abstinence is trifling in comparison of what is alleged concerning many of the Seals; to whom they have another point of resemblance, viz. that the Morse has been observed to discharge from its stomach considerable quantities of stones.

With regard to what constitutes the common food of the Walrus Naturalists do not seem well agreed. Some, as Schreber, affirm that they are not at all carnivorous, whilst the more common opinion—that of Fabricius and Crantz—is, that they feed on shell-fish and the marine vegetables which adhere to the bottom of the sea; and that

* Phil. Trans. vol. lxv. 249.

one use of their tusks is to disengage their food from the spots where it grows. Buffon, again, says that they live on prey as the Seal does, and particularly on herring and small fishes; in other words, that they are carnivorous. Mr Scoresby mentions that in their stomachs he had met with shrimps, a kind of craw fish, and the remains of young Seals; Mr Fisher, again, states that he found "long branches of sea-weed, *fucus digitatus*;"* so that, from these facts, as well as from some pointed observations of Martens, we have little doubt they are omnivorous, and make use both of animal and vegetable food.

Proceeding from their physical to their mental constitution, we may observe that they are monogamous, and thereby enjoy a peace and quiet in ordinary life which presents a striking contrast to what is seen in the case of very many of the Seals. They also appear to be in a remarkable degree social. We hear little or nothing of them in solitude, or in single pairs, but united together in dozens, more frequently in hundreds, and sometimes even in thousands. This crowding together on land, of so many awkward and noisy creatures, frequently gives rise to singular enough spectacles. "The moment the first gets ashore, so as to lie dry, it will not stir till another comes and forces it forward, by beating it with its great teeth; this one is served in the same manner by the next, and so on in succession till the whole are landed, tumbling over one another, and

* Apud Bell, Brit. Quadr.

forcing the foremost for the sake of quiet to remove farther up.*" Usually harmonious among themselves, they have no disposition to molest others. Retirement is the object of their choice, and, far from being the enemy, naturally they are not even afraid of man. "The Walrus," says Scoresby, "is a fearless animal. It pays no regard to a boat except as an object of curiosity. Being sometimes taken by the harpoon when in water, if the attack fail, it often affords an opportunity of repeating it." This is mentioned as a proof of its stupidity: but if slow to learn, its dear bought experience at length convinces it of man's unrelenting persecution, and then it watches against every sudden surprise with unremitting perseverance and the most cunning stratagem, so that, with all his art, man often cannot reach it; and if in favouring circumstances he does, then all the latent energies of its character appear. Though never the aggressor, it can ably act in defence; and behaves with cool courage and great bravery. It can do much for its individual defence, and is willing to lend an efficient help to its associates, and thus combining, they become most formidable, and even dangerous foes. Here, too, it is that their parental and filial feelings are called forth; the mother, with the most admirable self-devotion, sacrificing itself for her young, and the young exhibiting an affection for its parent, which no animal, nor man himself, could exceed. A few details will serve to

* Pennant's Quad. ii. 267.

illustrate these peculiarities in the character and habits of the animal.

Their tendency to herd together is well displayed in the account given by Lord Shuldham. "The Walrus," he remarks, "is a native of the Magdalene Islands, (Gulf of St Lawrence.) They resort thither early in spring, and the place seems peculiarly adapted to their nature, abounding with shell-fish (clams) of a very large size. Here for a time they are suffered unmolested to come on shore, and amuse themselves, till they acquire boldness; for, at their first landing, they are so exceedingly timid as to make it impossible for any person to approach them. In a few weeks they assemble in great multitudes, which, previous to their being disturbed, used to amount to 7000 or 8000." * The same fact, along with others, is illustrated by Captain Cook, who was one of the first circumnavigators who gave any thing like a distinct account of this creature. He encountered them in the North Pacific Ocean, where his further progress was arrested by the impenetrable barrier of ice. "At one o'clock," we read, "we got entangled with the edge of the ice, on which lay an innumerable number of Sea-Horses. They were lying in herds of many hundreds, huddled one over the other like swine, and were roaring and braying very loud, so that in the night, or in foggy weather, they gave us notice of the vicinity of the ice before we could see it. They were sel-

* Apud Pennant, in Arctic Regions, 149.

dom in a hurry to get away, till after they had been once fired at, when they would tumble over each other into the sea, in the utmost confusion. Vast numbers of them would follow, and come close up to the boats, but the flash of a musket in the pan, or even the bare pointing of one, would send them down in an instant." Zorgdrager, in his account of the whale-fishery, gives a similar testimony, mentioning that, before they were persecuted at Spitzbergen, they advanced far upon land, and were little upon their guard, so that sometimes 300 or 400 of them were killed at a time. They were soon taught, however, a lesson of caution and prudence. "Ere long," continues the interesting voyager, "they withdrew to the most unfrequented places, into retired plains and banks of sand, where vessels rarely approach, and when followed there, instructed by the persecution they had suffered, they are so much upon their guard, that they keep always near the water, to facilitate their retreat. This fact I experienced on a large sand-bank near Werland, where I fell in with a troop of thirty or forty; some were on the very margin of the water, and the others at no great distance. We stopped some hours without landing, in the hopes that they would advance further into the plain. But as this stratagem did not succeed, we landed with two boats to the right and left of them, but almost the whole of them were in the water the moment we put our feet on shore." Zorgdrager thus ascribes their increased caution to dear bought experience; and the

lesson, it would appear, could be learned very thoroughly; for Cook again remarks, "We never found the whole herd asleep, some being always on the watch. These, on the approach of the boat, would rouse those next to them; and the alarm being thus gradually communicated, the whole herd would be awake presently."

But, with all their watchfulness, we are not to wonder that, when man makes the attack, and selects his time and opportunity, his designs should circumvent, and his arts entrap, his devoted victim. We have already seen that their first object is always to escape; but if foiled in this, they defend themselves with boldness, and conduct themselves with a gallantry which ensures the respect, at least, of their foes. "When I wounded one," says Martens, "others speedily surrounded the boat, and whilst some endeavoured to pierce it with their tusks, others raised themselves out of the water, and did every thing they could to board it."* The testimony of the celebrated Captain, now Sir Edward Parry, is very specific on this point. On encountering these animals in Fox's Channel, he remarks, "we saw about 200 lying piled, as usual, over each other on the loose drift ice. A boat's crew from both the Fury and Hecla proceeded to the attack; but these gallant Amphibia, some with their cubs mounted on their back, made a most desperate resistance, and one of them tore the planks of a boat

* Voyage in Greenland.

in two or three places. Three only were killed."* And thus Zorgdrager,—" When a blow is struck with a spear, it must instantly be retracted to prevent the animal from seizing it, and with it wounding the assailant, as sometimes happens. When severely wounded itself, it becomes very furious, striking from one side to another with its teeth, and breaking the weapons with which it is attacked; and at last burning with rage, it places its head between its paws, and allows itself to tumble into the sea." The only other witness we shall adduce on these points is Captain Phipps, afterwards Lord Mulgrave, who encountered them during his attempted voyage to the North Pole in 1773. When near an island to the north of Spitzbergen, he remarks— "Two officers engaged in an encounter with a Walrus, from which they came off with little honour. The animal, being alone, was wounded in the first instance; but, plunging into the deep, he obtained a reinforcement of his fellows, who made a united attack upon the boat, wresting an oar from one of the men, and had nearly upset her, when another boat came to their assistance."†

Their mutual affection having now been rendered sufficiently apparent, we shall add an anecdote or two, bearing more especially on their parental regards. "The female," says the illustrious Captain Cook, "will defend the young one to the very last,

* Ed. Cab. Lib. i. 299. † Lib. cit. i. p. 374.

and at the expense of her own life, whether in the water or on the ice. Nor will the young one quit the dam, though she be dead; so that, if you kill one, you are sure of the other." The following incident is mentioned in Cook's third voyage, when the Resolution and Discovery were returning from Bhering's Straits. "In the afternoon we hoisted out the boats, and sent them in pursuit of the Sea-Horses that surrounded us. Our people were more successful than they had been before, returning with three large ones and a young one. The gentlemen who went on this party were witnesses of several remarkable instances of parental affection in these animals. On the approach of our boats towards the ice, they all took their cubs under their fins, and endeavoured to escape with them into the sea. Several whose young were killed and wounded, and were left floating on the surface, rose again and carried them down, sometimes just as our people were going to take them into the boat; and they might be traced bearing them to a great distance through the water, which was coloured with their blood. We afterwards observed them bringing them up at times above the surface, as if for air, and again diving under it, with a dreadful bellowing. The female, in particular, whose young had been destroyed and taken into the boat, became so enraged that she attacked the cutter, and stuck her tusks through the bottom of it."

Considering the intelligence and amiability that are thus displayed by the Walrus, we are not greatly

surprised to learn that it can be domesticated. The instances of this sort we have met with are not numerous, yet we cannot withhold our credence to the statement which De Laet* quotes from Edward Worst, who mentions that he saw one of these animals alive in England, which was three months old, and which had been brought from Nova Zembla. "Every day it was put into water for a short time, but it always seemed happy to return to dry ground. It was about the size of a calf; and could open and shut its nostrils at pleasure. It grunted like a wild boar, and sometimes cried with a strong deep voice. It was fed with wild oats or millet, which it rather sucked in than masticated. It was not without difficulty that it approached its master, but it attempted to follow him, especially when it had the prospect of receiving nourishment at his hand."

The Walrus has been known, though very rarely, to visit the British shores. One individual landed in the Island of Harris in the year 1817, and was speedily shot;† and another would appear to have been killed in Orkney in 1825.‡

The *chase* of the Walrus is of great antiquity: accordingly, we find that Octher, the Norwegian, about the year 890, gave an account of it to Alfred the Great, "having," he says, "made a voyage beyond Norway for the more commoditie of fishing Horse-whales, which have in their teeth bones of

* Description des Indes Occid. apud Buffon.
† See Edin. Phil. Journal, vol. ii. Paper by Mr MacGillivray.
‡ Nat. Lib. Mam. vol. vii.

great price and excellencie, whereof he brought some at his return to the king." The capture is undertaken both by sea and land, the former for evident reasons being the more hazardous enterprise. A Greenlander will never venture on the encounter alone, nor without the assistance of three or four expert comrades. They employ a harpoon, which, however, from the toughness of the skin, is fixed with difficulty, and hence it is not so easy an operation as the striking of a whale. When the instrument holds, the animal is allowed to swim about till it is wearied, they then try to secure it, and kill it with lances. But even under these circumstances, the process is not an easy one, the animal, as we have stated, getting roused, and fighting a hard battle. "It is necessary," says Zorgdrager, "to make a selection. Accordingly, the fishers aim at the eyes, which obliges the animal to turn his head, and then the fatal blow is aimed at the breast."—"In this crisis," says Scoresby, "the best defence against these enraged animals is sea-sand, which being thrown into their eyes, occasions partial blindness, and obliges them to disperse. Then the captured one becomes a more easy prey."

The following is Lord Shuldham's account of the capture on land :—"When the herd had made some little advance from the sea, the hunters, armed with a sharp spear, under cover of night, and with the assistance of good dogs trained for the purpose, endeavour to disperse them. This attack, in the Gulf of St Lawrence, is called 'making a cut,' and

it is generally looked upon as a most dangerous adventure, it being impossible to drive them as you will, and difficult to avoid them; but as, during the darkness, they do not know their way to the sea, many fall victims. The aim is made at the throat and breast; and in this way 1500 and 1600 have been killed at a cut."

As before hinted, fire-arms have not been found efficient in this encounter. The skin is so tough, and the lard so thick, that even the ball of a rifle scarcely ever penetrates with effect. When, however, the musket is charged with small shot, and fired in their eyes, it proves more serviceable, as, when thus blinded, the sailors can attack without danger, and successfully use their sharp instruments.

In the present age, according to Mr Scoresby, the Sea-Horses range the coasts of Spitzbergen almost without molestation from the British. The Whale-fishers rarely take half a dozen in a voyage. The Russians are their principal enemies, who, by means of the hunting parties sent out to winter on the coast, capture a considerable number.

The *products* of the Morse, for which it is valued, and made an object of casual or preconcerted chase, are its flesh and skin, its oil and teeth, the latter being by much the most valuable. Among the inhabitants of the Arctic regions its *flesh* is much valued and esteemed, and is greedily eaten along with the lard, and even the skin. Among our mariners, as food it is only regarded as a make-shift. Thus Sir Edward Parry—"The flesh

was found tolerably good, affording a variety amid the ordinary sea-fare." And thus Captain Cook—"Being in want of fresh provisions, and numbers of Sea-Horses in sight, the boats were despatched and procured some. Till now we had supposed them Sea-Cows, (probably the Manatee, to be afterwards noticed,) so that we were not a little disappointed, especially some of the seamen, who, from the rarity of the thing, had been feasting their eyes for some days past. Nor would they have been disappointed now, nor known the difference, if we had not had some on board who had been in Greenland, who declared what animals these were, and that no one ate of them. But, notwithstanding this, we lived upon them as long as they lasted, and there were few on board who did not prefer them to our salt meat."

The *skins* are found very useful in a variety of ways about shipping. In ancient times most of the ropes in the vessels of northern countries appear to have been made of this substance, and, when cut into shreds, and plaited into cordage, it formed lines which were used for the capture of the Whale; they also answer admirably for wheel-ropes, being stronger and wearing much longer than hemp. Cables, too, were wont to be manufactured from them, and the Findlanders used to pay tribute to the king in this form. They are also used in place of mats in defending the yards and rigging against chafing by friction. When tanned, the skin is converted into soft porous leather, above an inch in thickness;

but it is by no means so useful, nor so durable as in its green or raw state. Zorgdrager states that, when procured in Canada, it was cut into slices, and exported to America for carriage traces, and into England for glue. We believe it is admirably adapted for harness, and the manufacture of carriages.

We have already had occasion to state that the *oil* of the Morse is more valued than that of the Whale. The quantity varies at different times of the year, according to the condition of the animals. Scoresby states that, at some seasons, the produce is said to be considerable, but that he never met with any which afforded above twenty or thirty gallons of oil. Zorgdrager gives the average quantity at half a ton.

The *teeth* are usually more valuable than the oil. We have already stated their usual dimensions. The celebrated Gmelin, in his account of his journey in Siberia, mentions, that at Anadeirkai the teeth were found in such numbers on the shore, that there was no occasion for the inhabitants to slay the animals on their account. The relative value of the ivory from them and from the Elephant is variously stated by authors. Thus, whilst Lord Shuldham asserts that the ivory of the Sea-Horse is an inferior sort, which soon turns yellow, Anderson, and after him Schreber, maintain that, in hardness and permanent whiteness, it surpasses that of the Elephant. Zorgdrager also states that it is more precious, especially the internal part, and Denis, that no ivory

can be fairer. This latter, we believe, is the idea now entertained by the most competent judges. The Greenlanders, and other northern nations, are in the habit of converting it into their most important hunting weapons, and into tools and instruments for domestic uses. Among the Chinese it is employed for those curious uses to which they so wonderfully turn ivory; and, in most civilized nations, it is extensively used for the invaluable purpose of giving teeth to the toothless.



THE SEAL GROUP, OR PHOCIDÆ.

"L'histoire des phoques est même aujourd' hui extrêmement embrouillée; un grand nombre d'espèces sont encore à connoitre."—LESSON.

I.—THE PROPER SEALS, OR PHOCÆ.

IN proceeding to the Seal group, or Phocidæ, as it has been called—the Phocaceæ of French writers—we shall consider first the *Earless Seals*, or *Proper Phocæ*, the *Inauriculatæ* of Peron. The time is not very distant, as explained on p. 98, when the whole of the *Phocæ* were grouped as one genus; but latterly, M. F. Cuvier and the French Naturalists have divided them into seven distinct genera, and Professor Nilsson, by establishing another, has made the number eight. Of these, six belong to the Proper *Phocæ*, and two to the Eared Seals, or *Otaries*. From the total want of classification which so long prevailed, it naturally happened that, in whatever country a Seal was seen, it was regarded as the Common Seal, the *Vitulina* of Naturalists;

and hence it is next to impossible to ascertain the species to which all the earlier accounts refer; and the more so as some additional difficulties arise as connected with the colour. This is a subject which would require an extent of discussion into which we cannot enter. The appearance, when dry and out of the water, is often different from what it is when wet and in it. Again, it seems established that some species differ much each successive year, till full age is attained; and that in some, too, the male is very differently marked from the female; circumstances these, which have a tendency to induce the splitting of one species into many. Further, it has been stated, "that in many specimens of the same species, of both sexes and all ages, no two are precisely similar;" in short, that some differ in colour as much as our Pointers or Greyhounds; and this remark has been freely applied to many genera. We would here, however observe, that this conclusion should be drawn with caution, and it ought not, on the contrary, to be forgotten, that there is great uniformity in the colours of many kinds, both whilst young, and in the adult state. Frequent evidence will subsequently be afforded of this truth; and without dwelling longer upon the subject, we will now refer only to the Vitulina of the Scottish shores, to the Rough or Bristled, and finally to the Fur Seal. The ascertaining of this uniformity where it really exists, would contribute much to the ready determination of species.

When Baron Cuvier, fifteen years ago, examined

the Paris Museum in relation to this group, he found that there was distinct evidence of three species or varieties having been confounded as the Common Seal; but neither he nor any other of the French Naturalists succeeded, at that time, in detecting very clear or satisfactory specific characters.

The peculiar characters of the Proper Phocæ are, that their feet are enveloped in the integuments, so becoming swimming paws; the anterior are very short, and the posterior much in the same line with the body; they have no external ears; the incisors vary from six to four in the upper jaw, and from four to two in the lower; they are simply cutting; the molars have generally many small lobes or cutting points; the toes of the feet are webbed, and terminated by sharp claws.

GENUS CALOCEPHALUS, OR FINE SHAPED HEADED SEALS.

The name of this genus was selected on account of the great size of the cranium, and the shortness of the snout. The brain is scarcely inferior in size to that of the best organized monkeys, and hence they are easily tamed. Their dental formulary is $\frac{5.1.5}{2\,1\,5}=34.$

The grinders are formed of a large point in the middle, with a smaller one anteriorly, and two posteriorly; the nostrils do not extend beyond the mouth; the mammæ of the female are four; it has sometimes been stated two.

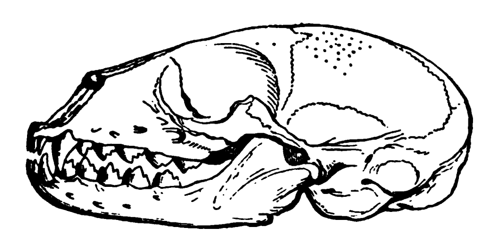




PHOCA VITULINA

Common Seal of the British Coast





COMMON SEAL.

Ph. Vitulina.—Linn.

PLATE II.

Specific Characters.—*Molars placed in an oblique position along the jaw; posterior margin of the palate acutely and deeply notched; palatal foramen on maxillary bone.*

Phoca vitulina, Cuv. Desm. 375. Calocephalus vitulinus, Fr. Cuv. Less. Sea-Calf, and Sea-Dog of Sailors. Selkie and Tang-fish of the North of Scotland. Raun of Western Isles.

For the detection of specific characters of this Seal, at once simple and satisfactory, we are, after long and vexatious doubt, indebted to the skill of Professor Nilsson. These characters consist, 1st, in

the oblique position of the molar teeth, by which the internal posterior margin of one is in contact with the outer anterior margin of the next behind it: this is regarded as an unerring character, which exists in no other known species; 2d, in the posterior margin of the palate being deeply notched; and, 3d, in the external process of the nasal bone being elongated and rounded, whilst the inner is not much more than half the length of the former, and with its fellow makes a small triangle.*

As we have had the pleasure of verifying all these indications in several animals which were captured on the Scottish coasts, we shall enter somewhat into details. It was through the kindness of Dr and Mr F. Knox that we first had an opportunity of examining the carefully preserved specimens of two Seals, mother and cub, caught in the Frith of Forth: the bones of the cranium of the latter of these are set up separately, and beautifully illustrate the general shape of the teeth, and the third specific character above enumerated; the adult cranium is preserved entire, and as clearly exhibits the two other characters. Along with them we received the skin, measuring five feet in length, with markings equally distinct and peculiar. The ground of the coat or robe is a dark tawny white colour, and this is studded universally over the body with small brownish black spots; the paws and feet have a very dark ground, but are still

* History of British Quadrupeds, by Thomas Bell, Esq. 262.

spotted. The robe is entirely destitute of fur, and is wholly composed of hair which is short, thick set, strong, and hard to the touch. Much about the same time we found in the rich collection of the Edinburgh Royal Museum two other specimens, the markings of whose skins precisely agreed with each other, and with the one just mentioned. These specimens were three feet long, and from their size, and the appearance of their teeth, may with tolerable certainty be concluded to be young. Finally, we have had the pleasure of examining a specimen in the valuable collection of the late Sir Patrick Walker, by whose polite attentions we were much obliged. This animal was captured on the West of Scotland, in the island of Colonsa, at a time when Sir P. was in the neighbourhood; and he, with that praiseworthy zeal for natural history for which he was distinguished, with much care and ability superintended its preparation. The first and most peculiar character of this species, viz. the position of the teeth, is clearly elucidated in this specimen, and the colouring of the robe perfectly agrees with those already dwelt upon. Its length is five feet three inches. To this we have to add, that Sir Patrick's collection contained another with precisely similar markings, which was also taken at Colonsa, measuring about three feet, and probably young. Here then are six Seals, four of which were certainly, and the other two probably, captured on the Scottish shores; they are true vitulinæ; the shades of tint and colouring, of great and small, are perfectly

identical; and hence we conclude that this is the common appearance of the Seal of these coasts.

Along with our notice of these specimens, we may associate a reference to a plate of foreign workmanship, which most closely resembles them. We allude to a very accurate and apparently faithful representation, by the celebrated Albinus, of a Seal taken on the Dutch coast, the markings of which correspond so exactly with those already mentioned, that we do not hesitate to regard it as the same species. Albinus' description is tolerably minute as it regards the internal structure, and to it, therefore, we refer the anatomical reader;* such extracts as suit our purpose, of further description, we shall here epitomise and introduce.

"The Seal," says Albinus, "which was sent me was taken in the neighbouring seas, and measured six and a half feet from the mouth to the termination of the posterior extremities. It had no external auricles, and the foramina leading to the organ of hearing were very small. At the inner angle of the eye was a third eye-lid, which could be easily drawn over the whole eye, an apparatus which appears to be frequently supplied to those animals in which the eyelids are used not only as a covering, but more especially as a defence from external danger. A few hairs went to form something like eye-brows. The nostrils were large, lunated, and easily opened. The upper

* Accademicæ Annotationes, lib. iii.

lip was much and roundly prominent, with whiskers like those of the cat; the hairs were not very numerous, of a white colour, rather long, like bristles, hard and horny, yet flexible. The teeth are described as those of the genus, in respect of number, and as very fit for seizing prey, and for self-defence. The tongue was long, and round at the tip, but somewhat sulcated at the upper part, so as to appear double. The hair generally was short, slender, and smooth, covering the whole of the body and the extremities. The colour was verging to tawny, (fulvum,) and the whole body was studded with a number of dark spots, the tints being paler on the belly and chest. The tail and posterior extremities were wholly brown, without any spots, except at the origin of the fingers, where there were a few tawny markings; the same observations apply to the fore-paws."

We have already dwelt sufficiently on those difficulties of our subject, which render the establishment of species and genera a work of so much uncertainty and toil. The same causes equally prevent our arriving at any precise knowledge respecting the distinctive peculiarities in the habits and dispositions of these animals; and therefore every authentic fact on these points is a valuable addition to our scanty stock of information. It is on this account that we the more readily avail ourselves of some details contained in a manuscript on the Seals of the Western Isles of Scotland, which has kindly been put

into our hands by Mr James Wilson, with free liberty to use it as we please.* From this we learn that the species, known under the appellation of *Rawn*, or Common Seal, is by much the most frequent. "The Common Seal, we read, is still to be seen in considerable numbers on the western coasts; and they generally frequent sounds and flats where fish is abundant, and where the water is not exceedingly deep. They seem particularly fond of flounders, which, on our coasts, appears to be their principal food, probably from their being a ground fish, and therefore easily caught. I have seen a Seal," says Mr A. M'Neill, Mr Wilson's principal informant, "frequently rise to the surface, and dive again with a flounder in its mouth, being unable, from the breadth of the fish, to swallow it, and when engaged in this attempt so intent are they on their prey, that they are frequently approached and shot." It is commonly believed that they feed on fish of all sorts, not excepting Salmon, and that they follow their prey up rivers for many miles in pursuit.

The opinion in the Western Islands agrees with that stated by Dr Fleming, that this variety produces its young about midsummer. According to this last authority, the number is two at a birth, though most hold there is only one.† They are

* This paper has since been published in the Magazine of Zoology and Botany. See vol. i. p. 539.

† Two were, in the month of July of this year, found in a litter on the Island of Cramond.

usually brought forth in caves, and very shortly after being whelped are taken to sea by the mother. The Seals of the Western Isles frequently attain the weight of sixteen stones, or 224 pounds, and swim with great rapidity; the author of the manuscript states he has seen thém swim half a mile in five minutes.

"All Seals," adds Mr M'Neill, "are fond of going to shore frequently, generally every tide. I have observed that they always select the flattest and most shelving rocks which have been covered with water at full tide, and almost invariably those that are separated from the main land. They generally go ashore about half ebb, and lie together so close as to appear almost touching, to the number sometimes of one, two, or three dozen, with their heads invariably turned towards the water, and seldom more than a yard or two from it. Like many other animals, however, they place one of their number a little farther up the rock, who seems constantly on the watch, and is every now and then raising his head to snuff the wind. In this position they frequently go to sleep with their head, I may say, hanging towards the water. They generally prefer small rocks, and, as I have already said, those that are covered with water, for two reasons, viz. because they are smoother, flatter, and softer, being covered with weed, and also because, being small, they cannot easily be approached without observation. They generally remain on shore, unless disturbed, for six hours, that is, till the returning tide

floats them off the rock. When on shore they frequently utter a grunting noise, not unlike pigs in a stye, but they never do so unless they feel perfectly secure."

There seems no doubt that the young of this species, especially, are easily domesticated, and display a great deal of sagacity. Thus Mr L. Edmonston mentions, "That one in particular became so tame that he lay along the fire among the dogs, bathed in the sea, and returned to the house; but having found his way to the byres, used to steal there unobserved and suck the cows; on this account he was discharged, and sent to his native element."* The following particulars concerning a young Seal of this species we owe to the polite and kind attention of Professor Trail. "A young Seal was brought to the house in which I resided when a boy, and lived for some time chiefly in the kitchen. It was about $2\frac{1}{2}$ feet long. It sucked one's fingers readily, and was fond of cow's milk, which it greedily drank. When thrown into the sea it speedily returned to the shore, and it seemed to be rather a social animal. Its favourite position was the kitchen hearth, the stone of which was elevated about four inches above the floor, and it generally laid itself so close to the embers of a peat fire, burning on the hearth, that its fur was often singed. If carried to any part of the kitchen, it speedily found its way back to the hearth-stone, moving by means of its

* View of Zetland, ii. 293.

e feet, and moaning piteously. I am uncertain
ether this singular predilection for the fire-side, in
animal whose natural element is the sea, was the
fect of illness, or arose from the pleasure which
hese animals always seem to have in basking in
warm sunshine."

The Ph. vitulina, as will appear from what has already been said, is generally understood to have a wide distribution. At no distant period they were regarded as not uncommon around the British shores. As, however, they are extremely shy, they almost invariably leave those districts which are crowded with population, and retire to spots where they are little disturbed. The Isle of Wight, many years ago, was famous for the number of its Seals; and the remark has more recently been made, "That about the Land's-end, and in Cornwall, they are perhaps more numerous than in any other of the coasts of S. Britain, unless it be in some parts of S. Wales. They are found more rarely off Cumberland and Lancashire, also off Northumberland, Durham, and Yorkshire, but in general they are rarely observed off the counties south of these."*

This Seal still frequents the estuary of the Tees, and may be seen in small herds basking on the sand-banks at low water: they emigrate to and from this locality, and are much more abundant in some years than others. These animals commit

* Bingley's British Quadrupeds, p. 57.

immense havoc among the salmon; and as in some years there is great scarcity of these fish, and in others great abundance, this circumstance has been associated with the presence of the Seal.*

They are more common, we believe, both in Scotland and Ireland than in England, more especially where the coast is bold and wild, and where they are little disturbed in their retreats. We conclude from what has been already said that this Seal is sometimes seen off the coasts of Holland and the neighbouring countries, and it is said to occur in large flocks on the coast of Greenland. This statement, however, very much requires confirmation.

Seals, according to the testimony of older authors, were in former times used extensively as food even in these isles. Thus Sir R. Sibbald says that the people in the island of Uist, Shetland, attack the Seals and kill them; the skin they sell, but the bulks they salt, and in the time of Lent eat them as sweetly as venison; and Low, in his Orkney, states that in North Ronaldsha they were captured for the purpose of eating, and were said to make good hams. At present, however, they are sought after only on account of their skins, and the oil which they yield.

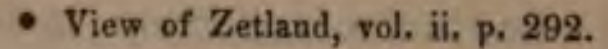
These Seals are captured both on land and at sea, and in a variety of ways. A few of the young ones are slain in the caves where they are brought forth. The old ones are shot when they can be reached on

* Bell's British Quadrupeds, p. 266.

sand-banks and rocks. Sometimes they are destroyed by recurved iron pikes secured in beams of wood fixed on the banks which they frequent, near low water mark; the Seals, at the proper time of the tide, are surprised, and driven rapidly into the water, when they are interrupted by the pikes, and despatched with clubs. According to Dean Monroe, the Seals of Islay were slain by the help of trained dogs. Martin, in his "Western Islands,"* makes mention of a rock off N. Uist, where there is an annual fishing in the month of October. A number of boats resort to the island with people sufficient to guard all the passages, and, on a signal given, the general attack begins, and sometimes 300 young and old are killed in the encounter. In Shetland, we learn from Mr Edmonston, that they are sometimes taken by setting a net, generally at night, a little before full tide, around those rocks which are known to be their favourite haunts, taking care that the upper edge of the net be sunk to such a depth as shall admit of the Seals swimming over it. The Seals almost universally lay themselves on the rocks when the wind is off shore, soon after the water begins to fall. When they have been observed to have done so, and time has been allowed for the tide to fall sufficiently to bring the edge of the net to the surface, a sudden alarm is given, and the Seals, in their hurry to escape, regardless of every other consideration, become entangled in the

* P. 62.

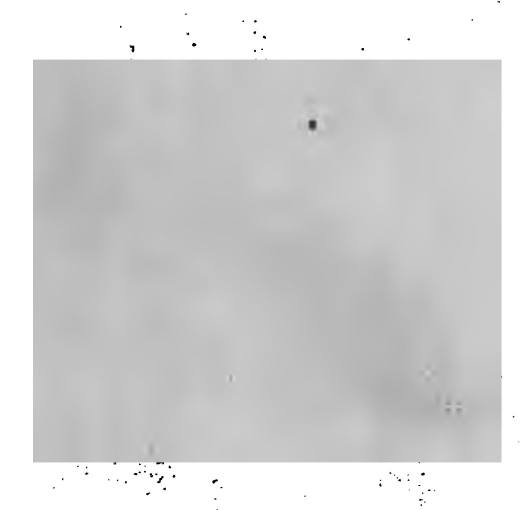
net, and are taken.* The author of the manuscript already quoted states, that "the Seal-fishing in the sea commences in autumn, and is practised by means of nets stretched across narrow sounds betwixt rocks where the Seals are in use to swim. In these the Seals entangle themselves, and are taken out either by boat, or, in those cases in which the net is left dry, by persons on foot. It is, however, the young ones only that are caught in this way, and that only during a month or two in autumn. In fact, the Seals display considerable ingenuity in evading the net, sometimes creeping out at the bottom, or jumping over it at the surface."


* View of Zetland, vol. ii. p. 292.









COMMON SEAL OF THE FRENCH COAST.

PLATE III.

Phoca vitulina, Linn. Phoque Commun of the French, Le Veritable Veau Marine, F. Cuv.

After having thus dwelt at some length upon what we regard as the true Vitulina of the British shores, we shall next introduce to notice that variety which Baron Cuvier has selected* as the type of the genus, and which M. F. Cuvier denominates "*Le veritable veau marine.*" This animal, if the true Ph. vitulina, should of course have the same essential characters with the one we have just left; and any apparent differences should be only temporary and insignificant, the consequences of youth, age, &c. Having had no opportunity of examining the identical variety selected by Cuvier, we cannot decide if the two in every essential character coincide. From the examination of the plates, we should be led to suspect that they differ; and this suspicion is

* Oss Foss. t. v. p. 200

confirmed by the authority of Cuvier himself, who, knowing that the Dutch variety, as described by Albinus, (and which we have identified with the Seal of the Scottish coasts,) had long been confounded with the *Phoque Commun* of the French coast, was disposed to distinguish them;* and in this decision he is followed by his brother.†

The length of the Common Seal of the French coast is stated, by nearly all the native Naturalists with the exception of Baron Cuvier, to be about three feet; he, however, gives it as between four and five. The ground of the robe is a pale yellowish-grey, clouded and spotted in the upper part of the body with a dark grey, arising from the hair in these parts being black. The circumference of the eyes and muzzle, the lower portions of the body, and the feet, are of a pale yellowish-grey, becoming almost white underneath: the upper part of the muzzle and tail are sometimes brown; the nails are black and strong.

The individual represented in the two figures on the accompanying plate, taken from M. F. Cuvier's *Mammifères*, was still young: it measured two feet eight inches, from the end of the snout to the tip of the tail; and the length of this member was three and a half inches. In the plate it is represented both whilst wet and dry, that the differences in these two states may be exhibited. When the animal comes out of the water, all the upper part of the

* Loc. cit. p. 202. † Mamm. Mar. 1824.

body and head, together with its hind feet and tail, are of a slatey grey colour. The grey upon these parts is uniform, whilst that on the sides of the body is composed of numerous small round spots, on a ground somewhat paler and more yellow; all the under part of the body is of this latter colour. Again, when the coat is dry, the grey is to be seen only along the back, and even here it is very faint; and, with this exception, the body is wholly yellowish. This difference of colour appears to depend partly upon the effect of the water on the long silky hairs, which are generally flat, and which, when moist, become somewhat transparent, thus modifying the colour of the parts underneath; and partly upon the circumstance that, when out of the water, each hair being opaque, curls up at its extremity, and allows the yellow portion, which is situated deeper, to be seen. The oily matter, which lubricates these hairs, appears to issue from certain glandular organs which abound round the eyes, and upon the shoulders, flanks, and lower parts of the belly. This matter is black, and offensive to the smell.

THE MARBLED SEAL.

PLATE IV.

:. Calocephalus discolor, Fr. Cuv. C. Martré,

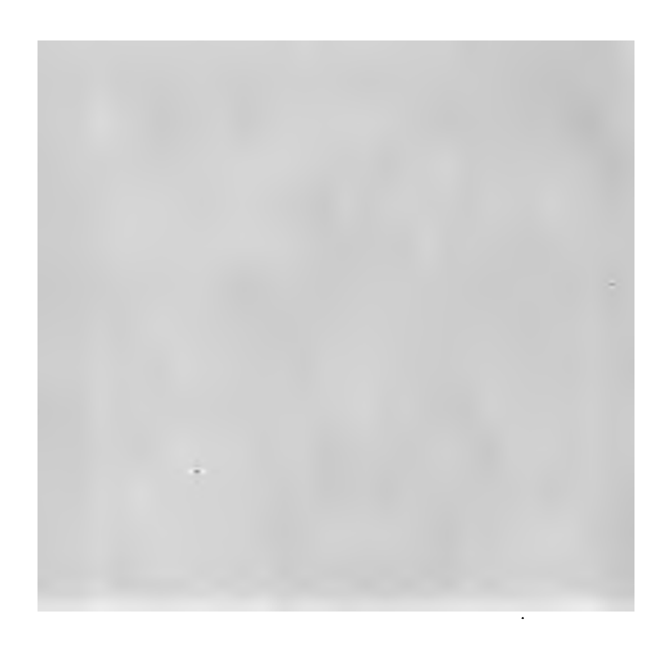
next introduce another variety captured on the ıch coast, which was originally identified, but subsequently dissociated from the true P. vitulina. Baron Cuvier states, that it does not appear to be a variety proceeding from age and sex only, though its cranium, he adds, does not sensibly vary from the Common Seal.* Professor Nilsson, we understand, regards it as a distinct species, and applies to it the name *annellata.*

M. F. Cuvier remarks—" I was for a considerable time in possession of the individual on which I found this species. My specimen was young, and its size appeared to correspond with that of the Common Seal." The colours, however, in which it was clad were very different. All the ground-work of its coat was of a very deep grey, varied with whit-

* Oss. Foss. v. 201.







ish irregular lines, which formed, especially on the back and flanks, a kind of marbling, which was more marked when the animal was in the water than when it was dry. According to the Baron, the coat, wholly of a blackish-brown, is marked with tortuous and irregular lines of whitish-grey, which form islands or marble spots; the under part is paler, and its greyish lines are broader and yellower. There are other individuals in which the whitish-grey of the abdomen prevails more extensively, mounting up the sides; and others, again, in which the markings on the back have a resemblance to the eye.

The specimen referred to was taken on the coast of France, and was kept several weeks in the Royal Menagerie. M. F. Cuvier observes—"Except in some Monkeys, I have never known any wild animal which was more easily tamed, or attached itself more strongly. When it first came to the *Jardin des Plantes*, it endeavoured to escape, when I wished to touch it; but, in a very few days, all its apprehensions vanished: it had discovered my intentions, and rather desired my caresses than feared them. It was in the same enclosure with two small dogs, which amused themselves by frequently mounting on its back, with barking, and even biting it; and, although these sports, and the vivacity of the attending movements, were little in harmony with its own actions and habits, yet it appreciated their motive, and seemed pleased with them. It never offered any other retaliation than slight blows with its paws, the object of which was to encourage

rather than repress the liberties taken. If the puppies escaped from the enclosure, the Seal endeavoured to follow them, notwithstanding the difficulty it experienced in creeping along the ground, covered with stones and rubbish. When the weather was cold, the three animals huddled closely and kindly together, that they might contribute to their mutual warmth."

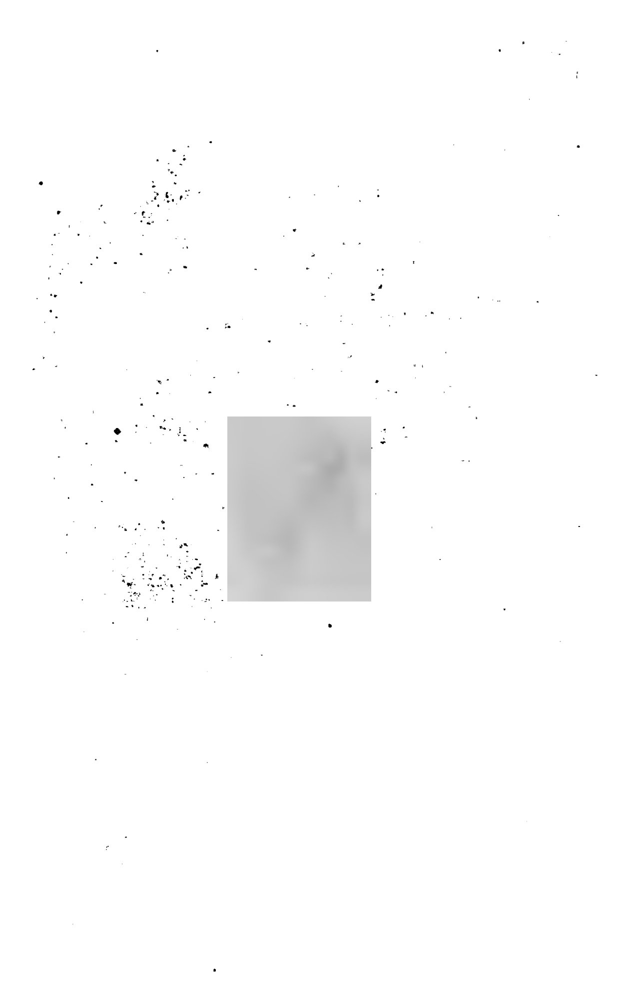
The creature did not exhibit any alarm at the presence of man or animals, and did not flee unless when run upon in such a way as to threaten its being trod upon, when it got out of the way to avoid injury. Though very voracious, it did not manifest any opposition or anger when robbed of its food. "Often," says the learned Naturalist, "have I tried him when pressed with hunger, and he never opposed my will; and I have seen the dogs, to whom he was much attached, amuse themselves when he was feeding, by snatching the fish from his mouth, without his exhibiting any rage. On the other hand, when their mess was supplied to the Seals, (for he had a companion,) as they were lying in the same trough, a battle was the usual result, and blows with their paws followed, and as usually happens, the more feeble and timid left the field to the stronger."*

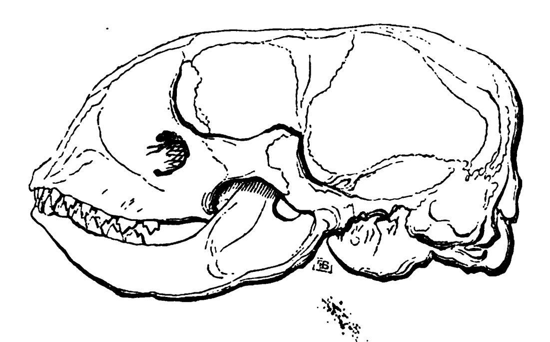
* Mammif. Livr. 1819.





A BARBATA
Seal





THE BEARDED, OR GREAT SEAL.

Phoca barbata.

PLATE V.

SPECIFIC CHARACTERS.—*Muzzle large; lips tumid. Third toe of the fore-feet longer than the others; fur dark coloured; teats four. Incisor teeth small and conical, the outer the larger; canine teeth conical and slightly curved; grinders in a direct series, with small intervals nearly uniform, having a large conical, and two small lateral points.**

Phoca barbata, Fab. Mul. Cuv. Desm. (No. 378.) Calocephalus barbatus, F. Cuv. Urksuk of Crantz. Great Seal, Pen. Le Grand Phoque, Buff. Haaf fish? of North of Scotland.

As we are not aware that any authentic representa-

* This description of the teeth is derived from Mr MacGillivray in Nat. Lib. vii. 213.

tion of this species has hitherto been published,* we must say a word or two on our plate. The individual from which the engraving is taken was brought from the Arctic regions by the late Mr Latta, Surgeon, Leith, and was presented to the Edinburgh Museum by Bindon Blood, Esq. From the state of the preparation we cannot judge so satisfactorily as we could wish, but, at the same time, we regard it as a specimen of the *P. barbata*. It is nine feet one inch long from the mouth to the tip of the tail; the tail measures seven inches. The fore-paw, it will be seen, is not shaped like those previously described, but somewhat assumes the appearance of the human hand, as will be more particularly stated in the sequel. The claws are very strong and black, carinated above; the hide all over is of a uniform dark fawn colour. Along with the Great Seal, we have associated a small white one, a specimen of which is in the Edinburgh Museum, scarcely three feet long, which has been supposed to be the young of this species. The white colour, it will be observed, differs entirely from the yellow shade appearing in those represented in Plate III., and is of a pure milk white colour all over. These figures, it should be remarked, being taken from excellent specimens, which are genuine and authentic, possess an intrinsic value,

* The Great Seal of Parson, Phil. Trans. vol. xlii.; and of Buffon, Suppl. t. vi. pl. 45, are now ascertained to belong to the Grey Seal; which see.

even should some hesitation remain as to their correct classification.

This species, according to Fabricius, from whose account we borrow, and whose statements are strikingly substantiated by the specimen above referred to, is often met with ten feet long, and the young of the second year are six and a half feet in length. Its head is long, and its forehead peculiarly prominent; the muzzle is very large, and the lips loose; the hairs of its whiskers are long, numerous, horny, flexible, smooth, white, and curled at the point: the external opening of the ear is larger than in most other species, but without any auricle; the eyes are large, and the pupil round and black, the iris brown. The fore-paw is more free than in the Common Seal; the shape also is peculiar, approximating somewhat to that of the human hand, having the middle finger the longest, and the thumb nearly as short as the little finger. The body is long and robust, and the back somewhat elevated; the skin is thick. The hide of the young is supplied with soft hairs, somewhat woolly underneath, which are deciduous, and but thinly scattered over the adult. The colour varies according to the age; the young have a dusky colour, and are white underneath; the old acquire a deep dark colour. Crantz says that the hair is black upon this the largest species of the Greenland Seals, frequently exceeding nine feet. Baron Cuvier says it is grey, sometimes brown above, with a longitudinal streak of black forming

a cross on the chaufrin. The teeth have been already described.

The evidence of this species, (or one regarded as such,) being not uncommon on the Scottish shores, is tolerably conclusive. In several notices we have met, the animal is stated to have reached the length of twelve feet. One is recorded by Pennant in these words—"A gentleman of my acquaintance shot one twelve feet long on the coast of Sutherland, but made no particular remarks upon it."* And Dr Hibbert writes—"Mr Low has stated in his manuscript tour, that a Seal, which was taken in Shetland, was not less than twelve feet in length."† Mr Edmonston states the usual dimensions to be from seven to ten feet; and observes, the male is the largest, and is called *Bull-fish*. The head is larger in proportion to the body than in the Common Seal; the eyes are placed deep in the orbits, but are large and penetrating. "In general habits," he continues, "this Seal differs much from the common one. They associate in pairs, and the male appears to be attached to a single female. They frequent the more exposed situations, and shelter themselves in deep and almost inaccessible caverns. The young are brought forth in the months of September, October, and November, and, when but a few days old, are as large as the Common Seals at the age of several months. They keep by themselves, and

* Act. Zool. ii. 159. † Shetland Isles, 412.

never seem to associate with the other species."* A valuable addition has recently been made to our knowledge of this Seal by Mr Selby, whose zeal for our science needs no eulogium in these pages. "This species," he remarks, "inhabits the Farn and adjacent islands. It attains a very great size, several having been killed during the last summer which weighed upwards of forty-five stones, or 630 pounds, and measured from ten to twelve feet in length. This species calves in November, upon several of the outer rocks, where the young are suckled every tide for the space of fourteen or fifteen days, when the long woolly fur which first clothed them is cast, and a new covering of close short hair supersedes it; they are then conducted by the dam to the water, from which they only emerge at intervals."† Dr Heysham has recorded that this species has sometimes been driven by tempests upon the coasts of Cumberland;‡ and Mr Maclean, minister of the parish of Small-Isles, Hebrides, mentions that the Great Seal is a distinct species; and, in proof, insists that it produces its young at a different and later season of the year.§

These detached notices we thus associate under the head of the *Great Seal*, or P. barbata; not only because they are so placed by their respective authors, but also because, upon the whole, we are

* View of the Zetland Islands, ii. 294.
† Bell's Brit. Quadrupeds, vol. i. 276.
‡ Bingley, p. 97.
§ Statis. Account, vol. xvii.

disposed to maintain, in opposition to some lately expressed opinions, that some of "the Great Seals of authors" do probably belong to this species. The opinions here alluded to are founded upon the recent determination of the Genus *Halichœrus*; in other words, of the Grey Seal, which would appear to be the prevailing variety in the Southern coast of Ireland: as it has been found also in the Severn, and elsewhere. Some have hence inferred, (as we think, hastily,) that all the Great Seals of our coasts belong to this latter species. The data from which we are induced to demur to this conclusion we do not at present enter upon; the truth appearing to be, that no positive decision can now be attained: and that the subject requires farther elucidation.

A fuller and more explicit account of some Great Seal occurring among the Hebrides, together with some interesting particulars concerning its habits, we take from Mr Wilson's paper. "The Western Islands are frequented by three different species of Seal, well known to the natives, and all of which I have repeatedly seen. The Common, or *Rawn*, as it is called, is by much the most frequent. The second is by much the largest of the three kinds, and at least double the size of the Rawn; it is known by the name of *Tapvaist*, and though it associates occasionally with the other kinds, yet it differs in many respects in its habits. The third kind is of very diminutive size indeed, and is known by the appellation of *Bodach*, or old man.

The average weight of the Tapvaist is somewhere about thirty stones, or 420 pounds, (implying dimensions, we conceive, as large as those given by Fabricius.) It is, upon the whole, solitary in its habits, and frequents the most distant and undisturbed places. It is not so lively or watchful as the Common Seal, nor is it so easily alarmed. One of the distinguishing traits of this species is the time of its producing its young, viz. in the end of September, or beginning of October, whilst the usual time of the other is the beginning of June. The young, whose colour we have already mentioned, remain on the rocks for several weeks before they can swim. Sportsmen, when they discover the young in this condition, do not approach it, lest the old one, which has a strong sense of smell, should be alarmed by the scent of the footsteps, but they conceal themselves at some point of the rock within gunshot, and wait the flow of the tide, when the old one invariably returns to give the whelps suck. These Seals are of late years become very rare on the Western coasts."

As exhibiting the favourite haunts of this and the other species, we shall borrow a few remarks from the lively pen of Dr Hibbert. "To the North of Papa-Stour high cliffs succeed, which are extensively excavated by the waters of the ocean. The most remarkable of these is Christie's Hole. It can be explored by means of a boat, a labour that is only to be accomplished in the calmest weather.

A large arch first presents itself, and after rowing through dark vaults the light of the sun bursts in from the lofty opening above. The boat then pursues its gloomy course through another extensive perforation, which at length expands into an immense cavern, where the light of the sun is wholly excluded. In the innermost recesses there is a steep beach, which terminates in small dens, where the larger Seals and *haaf fish* (the barbata) consort, and where the females produce their young and suckle them. It is customary for two boats' crew, of the island of Papa, to go to this place at certain seasons of the year, armed with thick clubs, and well provided with candles. They attack the Seals with their weapons, stun them by a blow on the head, and immediately put them to death. The animals boldly step forward in defence of their young; they face their destroyers, and with their teeth often wrench the clubs out of their hands. But the attempt is vain. The walls of the gloomy recesses are stained with their blood, and numbers of dead victims are carried off." (P. 551.)

Mr Edmonston informs us that these Bearded Seals are sometimes taken by setting a net across the entrance of the cave, into which they retire, and then firing a piece to alarm them. "It is surprising to see with what force they struggle under water, when entangled in the net, and the length of time they can remain without respiring. I once witnessed the capture of one in this way. It strug-

gled more than twenty-five minutes without ever performing a single respiration, and when brought to the surface was still alive."*

Fabricius states that this species frequents the high seas round Greenland, especially delighting in the floating fragments of ice; that it resorts to land principally in the spring time, and is then found among the retired islets. Giesecké says it is seldom met with on the coasts of West Greenland. In these quarters it is regarded both timid and incautious; and the older ones are remarked to swim but slowly. It is highly esteemed by the Greenlanders. Though it does not yield much oil, yet its lard is deemed "most delicious." The flesh has also been stated by Pennant to be as white as veal, and hence it is regarded as the most delicate of any.

We may here introduce the few observations contained in the manuscript so often alluded to, concerning the third variety of the Western Islands, in the hope that further attention will be directed to the subject.

"The *Bodach*, or *old man*, is by much the least of all the Seals with which I am acquainted; and, indeed, so small, that for a long time I entertained the idea (contrary to the firm opinion of the natives) that it was the young of the Common Seal. This view, however, I consider to be erroneous, for they are not even the size of a Seal three months old of the common kind. Besides, they are frequently killed of this size with grey beards and decayed teeth. I have frequently noticed that when on shore, on the same rock with other Seals, they do not lie near them, but a little way apart. They are but few in number, and I cannot recollect of seeing any two of them together. They are not, however, at all so shy as the Common Seal, nor so solitary as the Tapvaist."

* Loc. cit. 295.

THE PIED SEAL.

PLATE VI.

Phoca bicolor, Cuv. Pied Seal of Pen. Shaw, Bingley, Fleming.

Though there are no data by which to determine the genus to which this Seal belongs, yet as associated with British species, this is probably the best place to introduce the scanty notice which we have of it.

A curious mistake was committed in relation to this Seal. Pennant, who first described, and furnished a good engraving of it, considered it as the same as the *White-bellied Seal* of Buffon, and attached this appellation as a synonym. The next Seal he noticed in his treatise was the *Monk Seal* of Herman, so making this last distinct from that of Buffon, who, however, had described the identical animal which was so accurately examined by Herman. Dr Shaw followed Mr Pennant in his errors, which led Baron Cuvier to remark—"The Seal (Ph. bicolor) which Pennant regarded as a variety of the *Ph. à ventre blanc* is very far from belonging to that species."* No one can look at the two

* Oss Foss. v. 215.





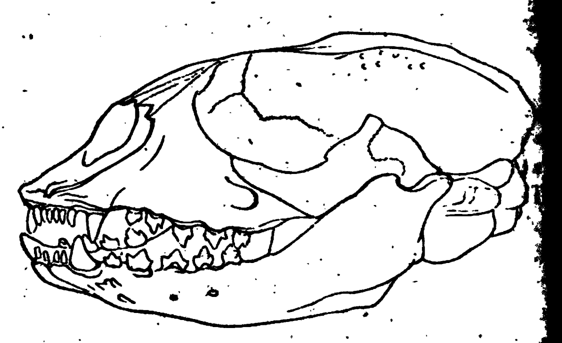
OCA BICOLOR
Pied Seal

figures without perceiving there is a great difference between them.

It is true, that, with regard to this creature, we desiderate all the interesting and accurate information which we have regarding the Monk Seal. Though it was seen by thousands, it was examined by none. The respect, however, which we owe to the name of the celebrated Pennant forbids us altogether to disregard his indication of it. "I first," says he, "saw this Seal at Chester; it was taken near that city in May 1766. On the first capture its skin was naked, like that of the Porpoise, and only the head, and a small spot beneath each leg, was hairy. Before it died the hair began to grow on other parts. The fore part of the head was black, whilst the hind part of the head and the throat were white; beneath each fore-leg there was a spot of the same colour; the hind feet were a dull white colour; the rest of the animal was entirely black. It was probably a young one. Its nose was taper, and elongated, and the feet exhibited the usual peculiarities of its congeners."* Mr Jenyns, in the "Manual of British Vertebrate Animals," remarks, that this Seal is probably only a variety of the Common Seal.†

* History of British Quadrupeds, vol. ii. Second Edition, 273.

† See Manual, &c. 1835, p. 16.



THE HARP, OR GREENLAND SEAL.

Ph. Grœnlandica.—Mul.

PLATE VII.

Specific Characters.—*Molars arranged in a straight line, with a small interval between them; anterior tubercle obsolete; posterior margin of palate-bones almost directly transverse.*

Ph. Grœnlandica, Mul. Fab. Desm. (No. 376,) Calocephalus Grœnlandicus, F. Cuv. Less. Identified by Baron Cuvier with the Ph. Oceanica of Lepechin. Attersoak of Crantz. Semilunaris Boddœrt; Crescent Seal of Buff. Harp Seal and Half-Moon Seal of Pen. Shaw, and Newfoundland Hunters.

By glancing at the synonyms, it will be observed that Muller, Fabricius, and Crantz, are the principal authorities for this Seal. Crantz states that it is nearly nine feet long, which, judging from the accounts of the far more accurate Fabricius, is a great exaggeration. He adds, it is almost wholly of a



THE GREENLAND OR HARP SEAL.
Male & Female



light grey colour, with a black marking on its back, like two half-moons. This marking accurately corresponds with that represented in our plate, which Major C. Hamilton Smith appears to have taken from a specimen in the Museum of Prince Maximilian of Neuveid.* Crantz designates it neither Grœnlandica nor Oceanica, but by the vernacular name *Attersoak*. Fabricius, after identifying it with this Attersoak, tells us that his Grœnlandica is six feet long; that its dental formulary is $\frac{3.1.6}{2.1.6}=38$; its colour is white on the forehead, with a great moon-shaped marking of a black colour on the sides. The muzzle is said to be very prominent; and the eyes, ears, tongue, and feet, to be the same as in the P. vitulina. Crantz' account of the successive markings is not very specific, yet as bearing on the difficulties of distinguishing species, we shall subjoin it. He states that, when new born, the Grœnlandica is quite white and woolly,† whereas other kinds are smooth and coloured. In the first year it is cream-coloured; in the second grey; in the third painted with stripes; in the fourth spotted; and in the fifth it wears its half-moons, as the sign of its maturity. Baron Cuvier remarks that he possessed skins both of the adult and young. He states that the fur is drier, and adheres closer to the skin, and is freer of wool at its base than other species; each

* See Griffiths' Cuvier, t. ii. 506.

† Lepechin maintains this is a mistake, and applies only to the young of the Hare Seal. Act. Acad. Scient. Russ. Petrop. An. 1777.





PHOCA BICOLOR.
Pennants Pied Seal.

The Greenlander now hastes to smite it with his long lance: thus he keeps darting at it till it is quite spent, when he kills it outright with his small lance; lastly, he blows it up like a bladder, that it may swim the more easily after his Kajak. In this exercise he is exposed to the most and greatest danger of his life. For if the line should entangle itself, as it easily may in its sudden and violent motion, or if it should catch hold of the Kajak, or of an oar, or the hand, or even the neck, as it sometimes does in windy weather, or if the Seal should turn suddenly to the other side of the boat, it cannot be otherwise than that the Kajak must be overturned, and drawn down under water. On such desperate occasions the poor Greenlander stands in need of [illegible] to disentangle himself from the string, [illegible] from under water several times [illegible] when he imagines himself to [illegible] comes too near the dying [illegible] and a female Seal that [illegible] will sometimes [illegible] most vehement rage, and [illegible] hole in his Kajak, that [illegible]

[illegible] is occasionally [illegible] probably borne [illegible] delights. This [illegible] two crania, be- [illegible] captured in the

[illegible]

Severn, appear to belong to this species; and also, that the cranium figured by Sir E. Home in the Phil. Trans. 1822, was taken from a Seal that was shot among the Orkneys.*

The oil extracted from this Seal is said to be in greater quantities than from any other of the Northern regions, and is likewise considered the best. The skin is used to cover the boats, and when undressed for tent coverings, and sometimes for body clothes. On the west side of the White Sea the skins of the young are manufactured into boats, which are quite water-proof, and might, on this account, be advantageously introduced into this country. Cuvier states that the fur of this Seal is one of the most important articles of trade among furriers.

* See Bell's British Quadrupeds, vol. i. p. 270.



THE OCEAN SEAL.

Ph. Oceanica.—Lepechin.

PLATE VII.*

Ph. Ocean:ca, Lepechin (Act. Petrop. 1777, t. i.) Desm. No 373, De Blainville. Calocephalus Oceanicus, Less.

Notwithstanding the very high authorities no named, it is with much hesitation that we in troduce the Ocean Seal as a distinct species. Ba ron Cuvier identifies it with the one immed ately preceding, viz. the Greenland; but D Blainville, Desmarest, and Lesson, distinguish th two animals. Lepechin, the highest authority o the point we possess, has a thorough convictio that they differ; and he grounds this opinion n upon any variation in the dental apparatus, bu chiefly upon the different markings of the youn He, at the same time, maintains that the one whic Crantz describes as the Greenland Seal is identic with his. It is chiefly then from deference to the distinguished Zoologists that we give the Oceani a distinct place in our enumeration; and we pa

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THE OCEAN SEAL OF LEPECHIN



this tribute the more willingly, as the description is carefully drawn up by an eminent Naturalist.

This animal, according to Lepechin, exactly resembles the Common Seal, and is distinguished from it only by its greater size, and the colour of its coat. The head is round, the mouth somewhat prominent and obtuse; the upper lip is tumid, thick, and marked with a furrow in the middle; it is longer than the under, which, in its turn, is somewhat more pointed. The number of teeth is as follows:—In the upper jaw there are four incisors, conically acute; the middle ones the smaller, those next the canines the stronger. The incisors in the under jaw are only four, and not so sharp.* Next to the incisors in both jaws is one canine, stronger and sharper, five lines long, and curved inwards; then there are six molars on each side of both jaws, three-pointed, the middle point being the longest and strongest. The teeth are so disposed, that when the animal shuts its mouth there is no interspace left, and the larger points of the upper teeth correspond with the smaller ones of the under ones, so that their prey, when caught, receive a deep wound with a single stroke. The tongue is cleft at the extremity, and furnished with rough papillæ, bent inwards. The eyes are large, and prominent; the iris is black, the pupil lucid; a sort of wrinkled skin, very firm and bare, supplies the place of eye-

* There is evidently some mistake in this enumeration, whether typographical or otherwise we pretend not to decide. We give it as in the original.

lids; it has a *membrana nictitans.* The aperture of the ear is ovate, surrounded with puckered skin, so as to shut. The neck is robust, formed like a truncated cone, though not very distinct. The nails are black. The extreme toes on the hind feet are the largest, the middle one is the shortest, so that the foot is crescent-shaped. There are but two mammæ, and the dam has but one at a birth.

The colour of the head is an obscure chestnut somewhat inclining to black. The rest of the body is a dull white, much the clearest on the belly. A great marking occurs across the shoulders, of the same colour with the head, which forks downwards on either side, and nearly meets again on the posterior part of the abdomen; it is somewhat in the form of a half-moon, and is more or less surrounded with irregular spots of the same colour: this precise colouring is always present. The young ones are during the first year, of a clear ash colour on the back, lighter below, and are everywhere spotted with a few black spots of a round and oblong form. In the second year the ash colour becomes somewhat whiter; the spots become larger and more distinct, and hence they are called *spotted*. This colour the females preserve unchanged; but the males, as they advance in age, undergo a further change as stated above, and are hence named *winged Seals.*

These Seals love the colder parts of the sea; hence they only appear along the ice in the White Sea; and having, about the end of April, given

birth to their young, and reared them for some time, they disappear with the ice, in the great frozen ocean, leaving only the young ones, which remain till the ice which adheres to the shore is thawed, when they too follow the others. The fishers report that round Nova Zembla, where the ice abounds, some are to be seen at all seasons of the year.

This Seal, according to our author, is hunted for its skin and fat. The skins of the full grown are used as covers to writing desks, whilst those of the young are manufactured into hose, for they are very tenacious, and when properly prepared, they keep out wet better even than prepared calf-skin. The fat is very useful to curriers.



THE ROUGH OR BRISTLED SEAL.

Ph. Hispidus.—Schreber.

PLATE VIII.

Specific Characters.—*Molars somewhat more simpl than those of the vitulina; head more depressed; posterio margin of palate deeply notched.*

Phoca Hispida, Schreb. Calocephalus Hispidus, F. Cuv. Ph Fætida, Fab. Desm. No. 377, Neitsek Cr. Buff. Rough Seal Pen.

This Seal, which has been long catalogued in th works of Systematists, seems to have been accuratel defined and known, though to a considerable exten obscured by the confusion which involves the whol subject. After Crantz, it was next described b Fabricius with his usual accuracy and care, and hi account was soon put into an English dress b Pennant, in his Arctic Zoology, under the name o

[illegible]

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PHOCA HISPIDA

Rough Seal. No representation of it, however, has ever been published in this country, and little has since been added to its history either by English or French Naturalists, though Baron Cuvier mentions he was in possession of two crania of the species which were sent from Copenhagen.

We cannot, therefore, do better than first present the description of the author of the Fauna Grœnlandica. He states that it is the smallest of all the species which are found in the Northern regions, scarcely ever exceeding four and a half feet in length, and usually reaching only four feet, with a perpendicular height of ten inches. The head is short and round, the muzzle extending to about one-third of the whole head. The whiskers are white, with a few black hairs; they are sharp, compressed, and a good deal curved at their extremities; the eyes are small, the pupil white, and the iris brown. The body is almost elliptical and slender; the back somewhat gibbous; the belly flat, especially near the fore paws; the hair is thick set, somewhat erect, rather long, soft and fine, with curly wool at its root. The colour is on the back brownish, intermixed with white spots, and on the abdomen is white, with a few brownish spots; the young are almost without spots, but have the back of a somewhat livid colour, with the belly white. The old have the most distinct markings, and in them the snout is almost naked, with few or no hairs. The old males have a most disgusting smell, which annoys even the Greenlander.

This account has all the semblance of accuracy; and so far as the markings of the skin are concerned, entirely agrees with one now before us, and from which the colouring of our plate is taken. Crantz says, "the hair does not lie smooth, but is bristly, and intermixed like pig's hair;" and again, it is said "to be bristled like the Polar bear." On making some enquiries respecting *Seals-skins* at a respectable dealer,* he informed us that he was quite familiar with two or three kinds, brought from the Northern fishery, and which were perfectly distinct from each other, and of a marked and uniform appearance. Some of these he immediately showed us, and was kind enough to supply for our use. The skin, now before us, is precisely four and a half feet long; and, according to our intelligent informant, those of this sort never exceed this length, whilst their breadth is proportionably small. Its markings, too, are invariably nearly the same, and could not be better described than in the words of Fabricius. The robe is composed of long coarse hairs, some of which, when dry, have a tendency to curve somewhat backwards, and of soft woolly hair beneath. Most of the long hairs are white, but in those parts where the skin has a brownish tint, some of this last colour are intermixed, which produces a grizzly appearance. The colour varies much according to the light in which we regard the robe: In some lights it has a silvery brightness, and in others it is quite dull. Crantz says that

* Mr Boswell, Nicolson Street, Edinburgh.

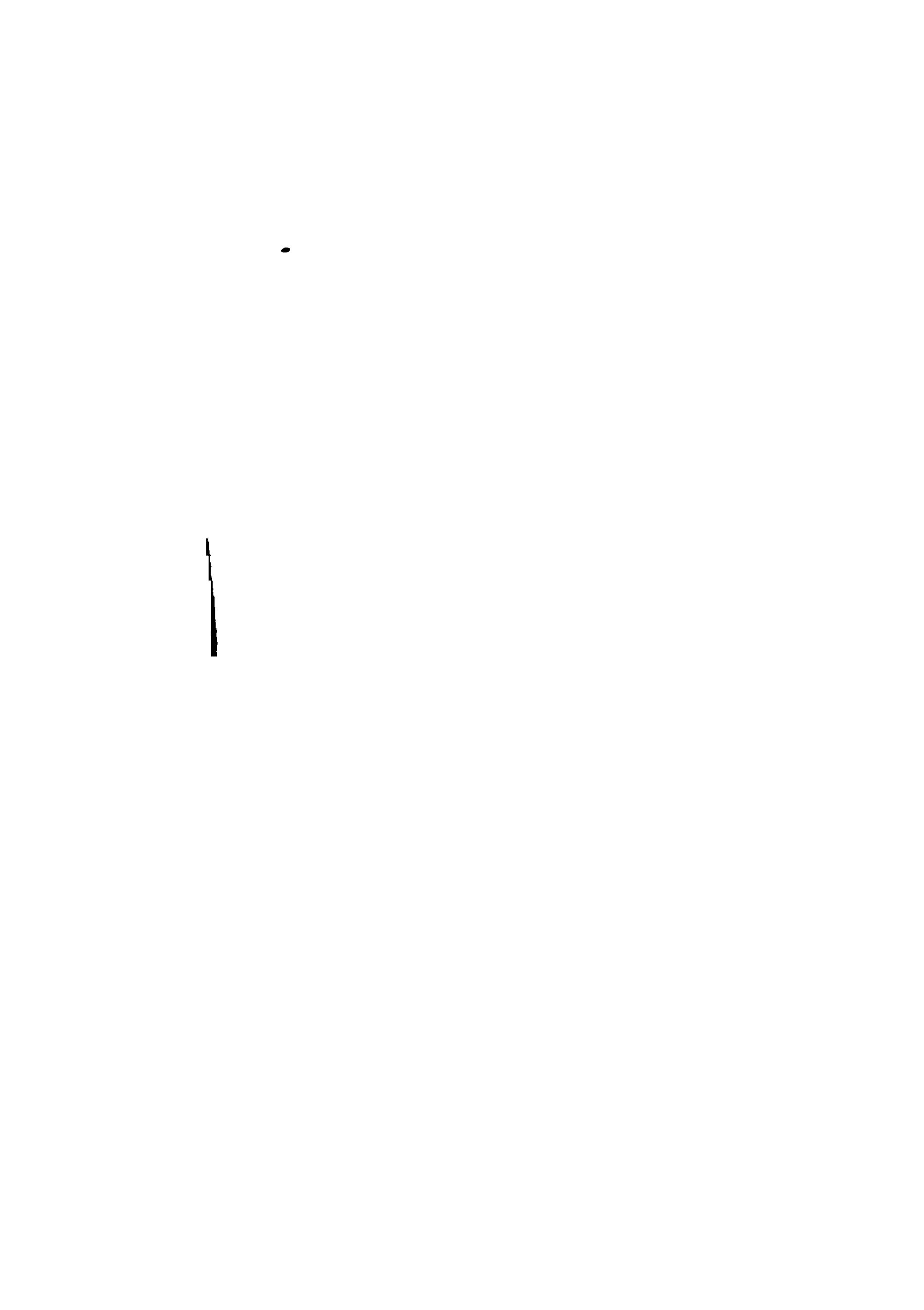
when the Greenlanders make garments of this skin, they usually turn the hairy side inwards.

This species, according to Fabricius, scarcely ever frequents the high seas, but delights in retired bays, and in the neighbourhood of the ice of the coasts, from which, especially when old, it very unwillingly departs. Its food is all kinds of smaller fish, such as haddock, but especially lobsters and their congeners. The period of gestation is eight months, and the young are brought forth in February on the fixed ice, its proper haunt. Here it has a hole, not so much for breathing as for fishing, near which it remains usually solitary, rarely in pairs. It is the most incautious of Seals, both in the water and the ice; whilst asleep on the wave, it is sometimes pounced upon by the eagle and borne to shore.

According to Giesecké,* many thousands of this species are killed every year on the West coast of Greenland, in lat. 72°. Though they emit a disagreeable smell, yet he states they are notwithstanding eaten with great avidity by the Northern Greenlanders.

Their most valuable product is their oil; but many thousands of their skins are also regularly imported into these countries, where they are used in the manufacture of trunks, and for other domestic purposes.

* Article Greenland in Edin. Encyclop.





THE HARE-LIKE SEAL.

Ph. Leporina.

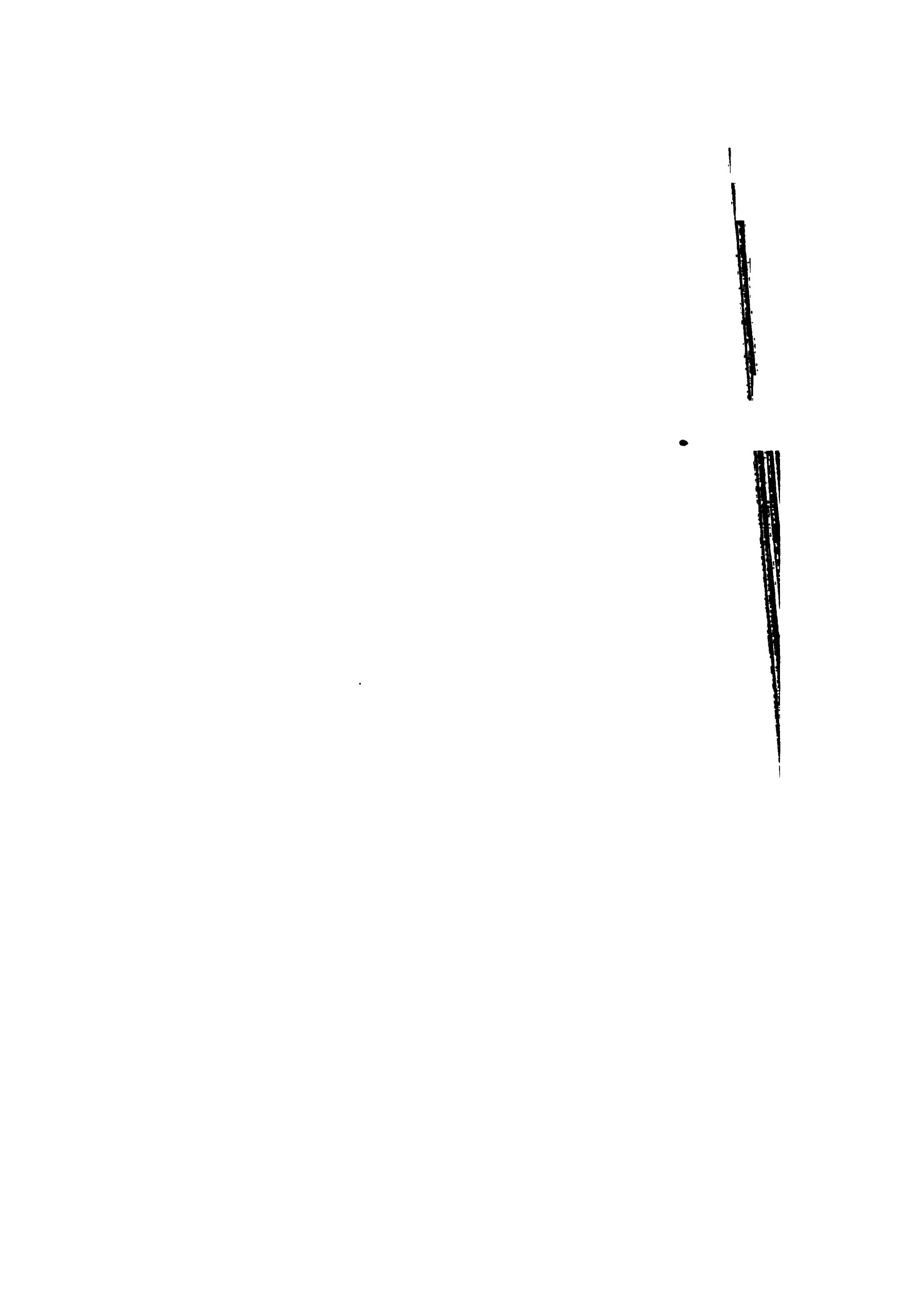
PLATE IX.

Phoca Leporina, Lepechin, Cuv. Des. 374, Blainv. Pennant. Shaw. P. Lepechini, Less. Hare of the Sea of the Russians.

THE only other species referred to this genus which, with any satisfaction, we can adduce, is the *Hare of the Sea* of the Russians. Lepechin's is the first and almost the only account of this Seal hitherto presented to the public,* the descriptions of nearly all the Systematists consisting merely of copies from him.

He states that its length is six and a half feet, and its greatest circumference five feet. The head is elongated; the upper lip as if swollen, and thick like a calf's; the whiskers are strong and thick, covering the whole front of the lip; the eyes are blue, and the pupils black; the fore paws are short

* Acta. Acad. Scient. Imp. Petropol. anno 1778.







HOCA LEPORINA





feeble, ending abruptly; the membrane of the feet is not lunated, but straight. Its colour uniform dull white, with a tinge of yellow, and never spotted; the hairs are erect, and inter-wen, and soft like those of the hare, especially en the Seal is young. The skin is very thick; the dental formulary marks it as belonging to s genus. This species frequents the White Sea, ring the summer months, and ascends and de-ends the mouths of its rivers with the tide, in quest prey. It is also found on the coasts of Ice-nd, and within the Polar circle at Spitzbergen and amskatka. It is appropriated to the same uses as s congeners.

Pallas makes the following remarks on this Seal. "There are many kinds of Seals in the frozen ocean, and this species, known among the Samo-yedes as the *Hare of the Sea*, differs wholly from the common kind. The young Hares of the Sea, whose skins I have procured, are white as snow, and shining like silver. Their hair is longer than that of other Seals, so that if the head and feet were removed, the skin might be mistaken for that of a young sea-Bear. It is in spring that the Samoyedes usually hunt these Seals, on their leav-ing the water, near the mouths of the Lina and other rivers, through those holes in the ice which the Seals keep open for the purpose of respiration. They place a number of planks nailed together in the neighbourhood of these holes, and fix a rope to them. They then conceal themselves behind the

neighbouring masses of ice, and as soon as the Sea
have left the deep, and lie down to bask on the ic
they pull the planks over the hole, by means of t
rope, and so prevent their return. They then de
patch their victims.*

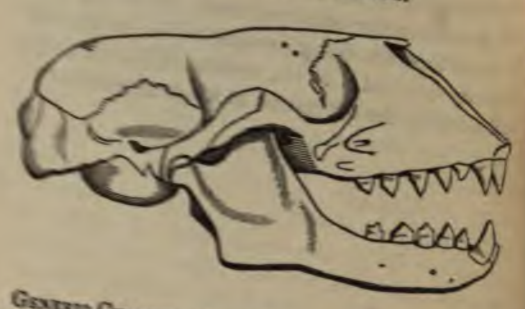
A young Seal, taken on the West coast of N
mandy, and brought to Paris, was suspected by I
ron Cuvier to be a whelp of this species, and M.
Cuvier has arranged it as such. Though we ha
great doubt of the accuracy of these conjectures,
here supply the interesting remarks of the lat
gentleman. Its length was two feet nine inch
It was of a yellowish-grey colour. "I had," says
F. Cuvier, "this animal under my care for a consid
able time, and it was easily tamed. When it w
teased it puffed like a cat, and when much irritate
barked feebly. It never attempted to bite in self-
fence, but scratched with its nails. It never ate e
cept when under water; its nourishment was the f
of the ocean, and we could never get it to take th
of fresh water.† He was peculiarly attached to t
old woman who had care of him. He soon ca
to recognise her at the greatest distance it w
possible for him to espy her; he kept his eye up
her so long as she was in sight, and ran to her
soon as she approached his enclosure. It may
suspected that hunger augmented his apparent affe
tion: and it was probably the cravings of that app
tite, and the attention he paid to every thing affecti

* See Voy. de Pallas, t. iv, 4to, 123.

† Dict. d'Hist. Nat. p. 545.

it, which led him to observe the place where his nourishment was kept, though sixty paces distant, and used for many other purposes. If he was free when his food was being brought to him, he ran and urgently solicited it by the motions of his head, and still more by the expression of his countenance."

GENUS HALICHŒRUS.



GENERIC CHARACTERS.—*Muzzle very deep, obliquely truncated; head very flat; molars of the upper jaw simple, those of the lower with an obsolete tubercle before and behind the principal one.*

THE GREY SEAL.

Halichœrus Griseus.—NILSSON.

PLATE X.

SPECIFIC CHARACTERS.—*Molars differ from those of the Vitulina in the absence, at least in most of them, of any small tubercle; the posterior margin of the palate is directly transverse; the palatal foramina on the palatal bones.*

Halichœrus Griseus, Nils. Phoca Halichœrus, Thieneman. Ph. Gryphus, Fab. Grey Seal, Bell.

BEFORE leaving the shores of the northern hemi-





HALICHŒRUS GRISEUS
The Grey Seal

sphere, we shall introduce this Genus Halichœrus, which has lately been established by Professor Nilsson. His work being still unpublished, we have not learnt his arrangement or division of the Genus; and our information has principally been obtained from Mr Bell's recent work, which is more especially confined to British species. Mr Ball of Dublin has supplied the principal information regarding this Seal, and we shall enrich our pages with several of his interesting observations. "When I was quite a child," remarks Mr Ball, "I took much pleasure in watching Seals, from the coasts of Cork and Waterford, and early became impressed with an idea that I could distinguish at least four species. Some years ago, on stating my opinions to some Zoological friends, I was induced to set about collecting specimens and information from various parts of the coast. For a considerable time I procured only one species; and, finding this labelled in our museums as *Phoca Vitulina*, I took it for granted it was so, until I procured a cranium of a very different species from Sligo, which, upon examination, I found to be the true *Ph. Vitulina*. I then sought to ascertain to what species the former specimens belonged, and searched in vain. Failing to obtain information, I was induced to bring the matter before the British Association; when Professor Nilsson recognised the craniam I produced as those of the Seal described by him as the *Halichœrus Griseus*.

"My observations on the habits of the animal do not altogether accord with those of the learned Pro-

fessor, who stated that it was solitary in the Baltic, whilst here I have seen it often in small parties, and learned from fishermen that they have noticed as many as thirteen congregated on a rock.

"Colour, in the present instance, appears to be a character of little value; for, in the many specimens I have seen, I do not remember that any two were precisely alike. The very young females seem to be generally of a dull yellowish white, with rather long hair, which falls off in about a month or six weeks, and gives place to a shorter and more shining coat, variously blotched with grey: this is brighter at first, and gradually grows more dull, and the blotching more indistinct on the upper parts, as the animal advances in age; whilst in the breast and lower parts, the blotchings in some specimens show almost as distinctly as the spots of a leopard. From a peculiarity in the hair of the adult, it being considerably recurved, and as if its upper surface were scraped flat with a knife, the animal, when dry, and with its head turned towards the spectator, appears of a uniform silvery grey, whilst viewed in the opposite direction, it appears altogether of a sooty brown colour; the spots or blotches being only visible on a side view. The only male specimen I possess died young: it has long yellowish hair, slightly tinged with brownish-black on the back; it is black on the muzzle, chin, and cheeks, extending round the eyes, but not to the upper part of the nose; and the palms of the fore-paws are black.

"My father has made several attempts to rear and tame this Seal, but in vain. It appears scarcely susceptible of domestication, and the development of its skull seems to indicate as much; for the size of the brain of a specimen nearly eight feet long did not exceed that of one of the Common Seals (Vitulina) of less than four. The head and general form of Halichœrus are long in proportion to its rotundity, comparatively with the other Seals.

"It occurred to me several years since, that I could kill Seals by going to the mouths of their caves, and striking them with a harpoon as they dived out. Acting on this, in August 1829, I went to Howth properly equipped, and took a position at the mouth of a cave, in which I could hear the inmates baying loudly like large dogs. On making a noise from the boat, several Seals passed out with great velocity, at the depth of about eight feet: one I struck with an oar, and another with a harpoon, but not effectually, as it gave way after a short struggle. Learning from the failure, we made ready for the next, which I could distinctly see at the bottom of the water, attentively watching us, sometimes advancing and again retreating: it seemed scared by the harpoons, which the friend who aided me and I held so deep in the water as only to offer it room to pass. After a considerable time so spent, we raised our weapons a little, when it made a start to escape, but in vain, as both our harpoons struck it, mine penetrating even to its heart. It twisted the shaft out of my hands, though between two and

three inches in diameter; it then pulled out our boat to sea, and, when compelled to come to the surface, we fired four shots into it before it ceased violent exertions. The quantity of blood was enormous, spreading to a great extent on the surface of the water. I estimate the weight of the animal, though in poor condition, to nave been upwards of 500 pounds: its skeleton now measures seven feet two inches; it was a very aged female, judging from the state of its teeth; yet it appeared to be suckling young, as there was milk in the mammæ."

After this interesting account, Mr Bell well remarks—"It is impossible not to be forcibly struck with the contrast between the cerebral development of this genus and that of the former, and the relation between the difference of structure, and their susceptibility of domestication. It is exactly analogous to the distinction between the crania of Baboons, and those of the higher groups of quadrumanous animals."*

It seems now to be ascertained that the large specimen which has so long existed in the British Museum under the name of the *Phoca Barbata*, belongs to the species now under consideration, and not to the genus we have just left. That animal was exhibited and died in London in 1742, but its place of capture is not reported. We have seen that the Grey is the prevailing Seal on the southern shores of Ireland. One individual has likewise

* Bell's Brit. Quadrupeds, vol. i. p. 278.

been taken in the Severn, and now belongs to the Bristol Institution; it supplied the subject of Mr Bell's wood-cut, whence our plate is taken. The London specimen, described by Dr Parsons, was seven and a half feet long, and was regarded as quite young. On the abdomen there appeared to be four mammæ, whilst other species are stated to have only two. The heart was long and flabby, with a large foramen ovale. The most singular point noted, however, is, "That, in the lower stomach, there were about four pound weight of flinty pebbles, all of which were sharp and angular, as if the animal chose them for cutting the food."*

Mr MacGillivray informs us that he has seen two specimens of this Seal from Orkney, examined one in Harris, and has reason to believe that it is not uncommon in the Outer Hebrides. Mr Edmonston also gives notice of its occurrence in Shetland.†

The usual habitats assigned for this species by continental writers are the northern shores of Europe, and the coasts of Pomerania.

* Phil. Trans. vol. xlii. p. 383.

† For some additional and valuable information, see Mr MacGillivray's interesting account in Nat. Lib. Mam. vol. vii. p. 214.

GENUS STENORHYNCUS.—F. Cuv.



Stenorhyncus, *i. e.* Narrow-muzzled Seal.

We now proceed to the second Genus proposed by M. F. Cuvier, denominated *Stenorhyncus*, Narrow-muzzled Seal. "The head of this Seal," he remarks, "is all snout, when compared with the former genus; the teeth, too, are quite peculiar. There are four incisors in the upper jaw in place of six; and the molars, though the same in number, are quite different in shape."

Baron Cuvier has very happily expressed it in these words:—"There are four very pointed incisors in each jaw; the two middle ones above are smaller, and are inserted farther back in the mouth than the others; the molars are deeply divided into three long points, which are conical, and somewhat hooked."

THE SMALL-NAILED SEAL.

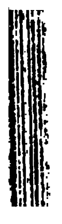
Ph. Leptonyx.—De Blainville.

PLATE XI.

Specific Characters.—*Dental formulary, that of the genus; shape singular; nails very small.*

Phoca Leptonyx, De Blainv. Desm. No. 379. Stenorhyncus Leptonyx. F. Cuv. Less. Small-nailed Seal.

It was about the year 1820 that M. de Blainville, on





LEPTONYX
...ted Seal





A LEOPARDINA or SEA LEOPARD
(Edinr Museum)
South Seas



THE LEOPARD SEAL.

Ph. Leopardina.—JAMESON.

PLATE XII.

Phoca Leopardina, Professor Jameson. Leopard Seal of Weddell. Otaria? and Stenorhyncus Weddellii, Less.

WE feel happy that we can present to the student of Zoology a correct delineation of this very peculiar and curious-looking Seal, taken from an excellent specimen in the Edinburgh Royal Museum, presented by Captain Weddell, who captured it in the Southern Ocean. We believe it is the only specimen in Britain, or in Europe, and, with the exception of the representation given in Captain Weddell's "Voyage towards the South Pole," is the only published one; so that it is so far new in the Repository of Natural history.

The very scanty information supplied by Captain Weddell, embraced in the few lines following, we shall now lay before the reader. "Having seen some Sea-Leopards on shore, (on the South Ork-

neys,) I sent the second mate to take them, who soon returned with six he had captured." This creature resembles the quadruped of the same name in being spotted; one is deposited in the Edinburgh Museum; and Professor Jameson has kindly communicated to us a description of the animal. He considers it a new species of Phoca, and gives it the following distinguishing characters:—"*Leopardine Seal.*—The neck long and tapering, the head small; the body pale greyish above, yellowish below, and back spotted with pale white. This species to be referred to the division Stenorhynque of F. Cuvier; the teeth, however, do not quite agree with those of the Ph. Leptonyx, nor with those of Sir E. Home, figured in pl. 29 of Phil. Trans. 1822." Mr W. again says—"In the evening the boat returned, having coasted these islands for fifty miles. They had found some Sea-Leopards, the skins of which they brought on board." About a week afterwards he writes—"In the evening the boats returned with two Seals, and ten Leopard skins;" and once more, when off the Shetlands, "Some Sea-Leopards have been seen."* Beyond these sentences there is not in the volume before us another word about this Seal, of which, however, he talks as familiarly as of one of our domestic animals. The scantiness of the details, we have no doubt, arose from his conviction that Naturalists were quite familiar with this animal, when in truth it was to them wholly unknown.

* Voy. p. 22, 24, 134.

We are therefore induced to give a somewhat extended description. As seen in our plate, the head is proportionally very small, and produced; the neck also is small, long, and tapering; the body is largest about the middle, and gradually tapers off again towards the tail; the fore-paw is small, and devoid of all projecting membrane; the first finger, (or thumb,) as in most of the true Phoca, is by much the longest; the others diminish gradually, and all are furnished with sharp black claws, slightly curved and grooved, carinated on the under side; the posterior extremity has neither nails nor projecting membrane. The hair is rather soft, and thin set; it covers the whole of both extremities, below as well as above, a character not found on many of the Otaries; the colours, which we take from Weddell, are a pale greyish above, yellowish beneath, and the back spotted with pale white. There is no trace of external ear; the eye is in the perpendicular over the angle of the mouth, distant three inches. The dental formulary is $\frac{2.1.5}{2.1.5}=32$; the incisors are conical in their form, and somewhat curved inwards; those in the upper jaw are by much the longest, and the two middle ones are placed further within the mouth than the other two, and are also much smaller; the canines are conical, they are very much developed at the base, and slightly grooved: the body of the molars is composed of three parts, the central conical part by much the longest and largest, with a small tubercle on each side. We shall add some measurements.

	Feet.	In.	Li.
Total length (over the back) from tip of snout to tip of tail	9	10	0
Length of tail	0	2	6
From snout to anterior edge of the base of fore-paw	3	5	0
From base of posterior margin of fore-paw to the tip of the tail	6	4	0
From base of one fore-paw to base of the other across the back	3	1	0
Circumference at upper part of the neck	1	11	0
——— round the body, broadest part	6	4	0
——— above the tail	2	3	0
Length of fore-paw, round anterior margin	1	1	0
——— posterior margin	0	8	0
Greatest breadth of fore-paw	0	4	10
Greatest length of posterior extremity	1	5	6
Greatest breadth, toes being extended	1	4	0
Breadth at base of the foot	0	4	6
Distance between inner angles of the eyes	0	3	6
——— angle of the mouth, and tip of lower jaw	0	4	0

The only habitats mentioned by Captain Weddell are the South Orkneys and Shetland, and of its habits, &c., he says nothing.

The learned and able author of the *Manuel de Mammalogie* has designated the Sea-Leopard an Otary, without assigning any reason for doing so, but probably misled by an analogy connected with the position of the fore-paws. We need scarcely add, this is a mistake. The acute author of the article *Phoque*, in the *Dict. Classique*, again, makes this same Seal synonymous with the *Long-necked Seal* of Parsons—the Longicollis of Grew, subsequently alluded to by Pennant, Shaw, Desmarest, Cuvier, &c. By turning to our account of the Fur Seal,

ellent Naturalist, to whom we are anxious
ss ourselves indebted for much instruction,
d that this is also a mistake, which we
en able to detect, chiefly through the in-
n afforded by our intelligent countryman,
ddell.

GENUS PELAGIUS.



We now proceed to the Genus Pelagius of M. F. Cuvier, which he states differs from his former genera more than they differ from each other. The head, instead of having the short snout of the former, or the slender snout of the latter, has one which is broad as well as elongated at its extremity, with an arched chaufrin. The teeth are the same in number with those of the Leptonyx, but their form is different. The upper incisors are indented transversely at their edge, so that the lower incisors, which are simple, fill up these indentations when the jaws are shut. The molars are thick and conical, and have only very minute rudimentary points, in front and behind.—There is but one ascertained species, which is

THE MONK SEAL.

Ph. Monachus.—Hermann.

PLATE XIII.

Phoca Monachus, Hermann,* Gmel. Desm. No. 372. Pelagius Monachus, F. Cuv. White-bellied Seal, Buff. Cuv.

Baron Cuvier remarks that, after the Common Seal,

* Mem. d'Hist. Nat. de Berlin, t. iv.









this is perhaps the species best known. It frequents the southern shores of Europe, and has frequently been examined by those who are competent to the task. Considering its habitat, and the old descriptions which remain, it is probably the species which was most familiar to the ancients. A property which was ascribed to its skin may be regarded as a striking exhibition of the extent of superstition, and of conscious guilt and timidity. By the undaunted Romans the skins of these Seals were considered as an efficacious preservative against lightning; and hence tents were constructed of them, under which they sheltered themselves during thunder storms. It is also mentioned by Suetonius, that such was the Emperor Augustus' dread of lightning, that, while at his usual place of residence, he resorted to a vaulted retreat under ground, on the approach of thunder; and when on a journey, he never travelled without carrying along with him one of these skins.*

For the description of this species we turn to the lively pen of Buffon, and the minute details of M. F. Cuvier. The former has given a particular description of a male, and the other of a female, which were at different times exhibited to the public. Both were taken in the Adriatic, and they agreed exactly in their general appearance; as did a third, captured in the same Sea, which was examined by Baron Cuvier in the Museum of Turin.

* See Memoir on Thunder by M. Arago. Edin. New Phil. Journ. vol. xxvi.

The *White-bellied Seal*, says Buffon, we saw alive in the month of December 1778. Its aspect is mild, and its disposition not fierce; its eyes are quick and indicate intelligence, or, at all events, they express the sentiments of affection and attachment to its master, whom it obeys with the utmost readiness. At his order we have seen it lay down its head, turn in various directions, roll round and round, raise the fore-part of its body quite erect in its trough, and shake hands with him. It responded to his voice and signs by a hoarse sound, which seemed to proceed from the lower part of the throat, and which might be compared to the hoarse bellowing of a young bull; it appeared the animal produced this sound both in inspiration and expiration, but it was clearer during the former, and rougher during the latter. Previous to being tamed, it bit its master furiously when interfered with, but when subdued, it became quite mild, so that it might be handled with all freedom. You might thrust the hand into its mouth, and rest your head on that of the Seal. When its master called, it answered, however distant he might be; it looked round for him when it did not see him, and on discovering him after an absence of a few minutes, never failed to testify joy by a loud murmur. Some of its accents were sweet and expressive, and seemed the language of pleasure and delight.

But, though its natural disposition was mild, yet, from causes probably connected with its confinement,

it was liable to occasional fits of irritation and violence. At these times it was dangerous, and even ferocious, for then it knew no one, nor regarded its master's authority, so that he could not approach it till after several hours return of calm composure. On one occasion it seized him by the leg, and it was with much difficulty it was forced to let go its hold, by forcing an instrument into its mouth: at another time it attacked a great dog, extensively lacerated its head with its teeth, and displayed the blindest rage against every object that came in its way. These paroxysms becoming worse and worse, it at length pined away, and died in August 1779.

The period between its several inspirations was very long, and in the interval the nostrils were accurately closed, during which time they appeared like two longitudinal slits on the end of the snout. The creature opened them to make a strong expiration, which was immediately followed by an inspiration, after which it closed them as before; and often allowed two minutes to intervene without taking another breath. The breathing was accompanied with a loud snuffling noise. This animal, like its congeners, slept frequently during the day; its snoring was heard at a considerable distance, and it could not be raised without difficulty from its slumbers. When drowsy, it did not promptly attend to its master, and it was only by putting food under its very nose that it could be excited to its accustomed energy and vivacity. It then raised its

head and the upper part of its body, supporting itself on its fore-paws to the height of the hand which held the fish; for it was scarcely satisfied with any other aliment, having a preference for carp, and still more for eels; these, though raw, were seasoned to its taste by rolling them in salt. It required about thirty pounds of these live fish every day; it greedily swallowed the eels entire, and even the carp which were first offered it, but, after devouring two or three entire, it subjected them to some preparation, by crushing their heads with its teeth, then partially gutting them, and concluded by gulping them head foremost

The keepers of this animal stated it could live for days, and even for more than a month, without entering the water, provided it were washed every evening with clean water, and had plenty of salt water to drink, for, when it drank fresh water, and especially if it were not quite pure, it was always sure to be injured by it.

This individual was seven and a half feet long; its skin was covered with a short smooth shining hair of a brown colour, mixed with grey principally upon the neck and head, where it was spotted; the fur was thicker on the back and side than on the belly, where there was a large white marking, which mounted up upon the flanks. The nostrils were neither inclined, nor were they placed as in terrestrial quadrupeds, but extended vertically on the extremity of the snout; they were three or four inches long, and when open, about two inches wide;

they were then of an oval shape, contracted at their extremities. The eyes were large, full, of a brown colour, and like those of an ox. When the creature is long out of the water, the eye becomes bloodshot, especially at the angles. The mouth, too, is large, and surrounded with strong whiskers, almost like fish bones. Instead of the external ear there was only a small opening which was almost concealed in the skin, and, though it was scarcely longer than a line, the animal had, nevertheless, very acute hearing.

This Seal was taken on the coast of Dalmatia, about 200 miles from Venice, and lived in a state of domestication nearly two years.*

To this detailed description of Buffon we shall subjoin from the interesting memoir of M. F. Cuvier such particulars as throw additional light on the animal's organization or habits.† "The Seals," he remarks, "are animals, so very remarkable for their intelligence and organization, that we should assiduously collect every fact that can elucidate their history. These considerations have determined me to give a description of a female which was taken in 1811, and which is at present (1813) exhibiting to the public, and has not yet, I believe, been described. For two years it has been kept in a trough, which scarcely exceeds its own dimensions, being only one foot longer, and two feet broader, than itself. It every day receives several pounds of fresh

* Hist. Naturel. Supplem., t. vi. p. 310.
† Annal. du Museum, t. xx. p. 387.

water fish, and usually spends nine or ten consecutive hours in water ten inches deep. At the close of the day the water is removed, that the animal may be dry during the night, and, in spite of this artificial mode of life, it enjoys excellent health.

"It would be a mistake to suppose that Seals are deficient in intelligence; on the contrary, it is certain that they have more than most quadrupeds, more even than dogs originally. They (some of them) are tamed without difficulty; they recognise those who feed them, and become attached to them; they also understand and obey them, and finally forget their former independence, and, by a second nature, enjoy their society with men.

"The length of this animal is between seven and eight feet, and the general form is very like that of the Common Seal. Its colour in the water is black on the head, back, tail, and upper part of the feet, whilst the chest, sides, and belly, and the under portion of the neck, tail, paws, and sides of the head, are of a yellowish light-grey. When it is dry, the black portions are not so deeply coloured, and the white parts are more yellow. The skin is everywhere of a slatey colour. The tail is three inches long, and without movement; the eyes are large, and the cornea is very flat in comparison of other quadrupeds; two hairs, similar to those of the lip, are seen above each eye; the pupil exactly resembles that of the domestic cat; the nostrils are naturally closed, and open only at the will of the animal; the ear has no trace of an external auricle; the ori-

fice of the auditory canal is situated nearly opposite the tympanum.

"This Seal devours its food without chewing it, and, after having removed the viscera, it always takes it into its mouth in such a direction that the fins and scales offer no obstacle to its easy passage. It sleeps throughout the live-long night, and cannot be kept awake during the day without the most unceasing perseverance. During sleep it is often observed covered with the water at the bottom of its trough, where of course it cannot breathe, and there it continues for an hour at a time."

We have nothing to add to these minute statements, except the remark of Baron Cuvier, that the average length of this species, when fully grown is between ten and twelve feet. We have already remarked, that it has long been known to frequent the Adriatic Gulf, and, of course, the shores of Greece. M. de la Marmora mentions that it is also found on the coasts of Sardinia.*

* Voyage en Sardaigne, p. 178.



THE CRESTED SEAL

THE CRESTED SEAL.

Ph. Cristata.—Gmelin.

PLATE XIV.

Ph. Cristata, Gmel. Desm. 371. Stem. Cristatus, F. Cuv. Leonina, Fab. Neitersoak, Crantz. Clapmutz of Egede, and the Northern Seal-fishers. The Crested Seal of Anson and Ellis.*

It is not without considerable hesitation we place the Crested Seal in the same genus with the Mitrata. M. F. Cuvier and Lesson associate it with the next genus, (Macrorhinus;) but solely because they identify it with the Elephant Seal, an animal from which it greatly differs. By others, again, it has been identified with the Mitrata; whilst much opposing evidence recently procured shows the inaccuracy of this conclusion. The details within our reach, especially regarding the dental apparatus, are still too few to enable us to come to a definite classi-

* The name *Hooded Seal*, given by Pennant and Shaw, as well as the popular French name à Capuchon, we regard as peculiarly unfortunate, as confounding this species with the next.

fication; but such as have been obtained will be supplied.

For our plate of the Cristata we are indebted to a Transatlantic Naturalist, who commends the draughtsman for "the very faithful delineation he has given." The plate elucidates an account of the animal, read by Dr Dekay to the New York Lyceum of Natural History. Though we have been enabled to present our readers with an accurate representation of this Seal, yet we have failed in procuring the accompanying account. It was published in the "Annals" of the New York Lyceum, which appeared monthly, and we have been able to procure the 4th number only, containing the plate, but not the 3d, wherein nearly the whole description is contained. We have to add that, for the expressive colouring of our plate, we are indebted to Mr Boswell, already honourably named on page 168. In favouring us with a fine specimen of the skin, he informed us that, next to the Rough Seal, this, which is very uniform in its markings, is the most frequently met with in the trade: it so entirely agrees with the following descriptions, that we do not hesitate to supply it as the skin of the Crested Seal.

The following is the description of this Seal, as given by the distinguished Fabricius. Though he applies to it the name of *Leonina*, which is unfortunate in many ways, yet he immediately adds, "Phoca capite antice cristato," with a crest on its forehead. He says it attains the length of eight feet. The indivi-

dual he had under his examination was only seven and a half feet long; its teeth corresponded with the account given above, with this addition, that in one specimen he had seen six molars in the lower jaw. He adds, a tuberculous body like an inflated bladder, keel-shaped in the middle, covered the anterior part of the head, and so preserved the forehead. This protuberance was confined to the males; the females and young having it quite rudimentary, forming a slight projection on the part. Moreover, in addition to the true nostrils, the male had spurious tuberculous ones, sometimes single, and sometimes double, according to their age. The mystachial bristles were long, whitish, curled, compressed at their base, and obtuse at the points. The eye was large and black, with a brown iris; there was no external auricle, and the orifice was very small. The body of this species is long and robust, covered with long somewhat erect hair, very woolly and thick underneath. The fore-paw is somewhat in the form of a human foot, the thumb corresponding to the great toe, and the others gradually getting shorter. The colour varies according to the age, being darkest in the aged: the head, tail, and feet, are black, so are the other parts, but spotted with grey spots, deepest, however, on the back; the younger are fairer; during the first year they are white, the upper part of the back being slate grey; the second year they are snow white, with a straight line of a brown colour on their back.

To this account of the accurate Fabricius, we

subjoin some interesting particulars which are appended by Drs Ludlow and King to Dr Dekay's memoir. Their account of the sac-like crest is as follows:—"About two inches from the extremity of the upper jaw, on the superior surface, arises a cartilaginous crest, rapidly increasing in height, as it passes backwards, being about seven inches in height at its posterior or vertical edge, which is separated into two planes by an intervening depression of an inch in depth. Its superior edge is slightly convex, and the whole structure is clearly an elongation of the septum of the nose, the true nostrils opening on each side of it by an oblong fissure. This crest runs into the hood or sac-like appendage of the head. This hood is strongly muscular, with an aggregation of circular fibres round its external orifices, which are two, situated at the lower anterior part of the head. These probably served the purpose of sphincters, so as perfectly to close the sac. The length of the upper jaw beyond this crest is chiefly attributable to the intermaxillary bones, which are long and broad."

The following is their interesting account of the eye:—"The eye is very peculiar, perfectly spherical, with the nerve entering directly in the axis of the ball. The sclerotic or external covering is divided at its middle entirely round; its two edges being connected by an elastic membrane thickly covered by muscles. The posterior half is subdivided into four longitudinal segments, extending from its edge to within a quarter of an inch of the entrance of

the optive nerve. This structure, by elongating the axis of vision, may enable the animal more clearly to discern distant objects, and also, by the reverse, to draw the eye deep within the socket during repose, especially as there are no moveable eye-lids, but only the membrana nictitans; the lens is spherical; the iris is broad, and evidently muscular."

For the reason already assigned, we can supply little information from Dr Dekay himself. Respecting the teeth, he remarks on one occasion, "that they almost exactly correspond with those of the Mitred Seal;" and he says again, "the jaw teeth are more closely approximated, the furrows in them are deeper, and the last two are doubly furrowed." —"The dilatable sac," he remarks, "which comes over its head, and which, when swollen up, appears like bladders, is covered with short brown hair. The opinion of the fishermen regarding this appendage is, that it is a sort of reservoir for air, which the animal uses when under water. Its great bulk, however, when distended, would prevent the animal from descending freely, or moving with facility beneath the surface of the water. The connection of the nostrils with the hood, the configuration of this part, and its internal structure, indicate its importance as subsidiary to the sense of smell. The weak arms of offence and defence allotted to this animal render it necessary that this faculty should be exercised in the greatest possible degree. The hair of its hide is soft and long, and woolly under-

neath, dark in the old, and grey in the young, covered with irregular brown spots."

Of the habitat of the Cristata, it is stated by Fabricius that it is found only on the southern parts of Greenland, and that it delights in the high seas; visiting the land chiefly in April, May, and June. According to Crantz, they are found mostly on great ice islands, where they sleep in an unguarded manner. They are found in great numbers in Davis' Straits, where they regularly make two voyages a year, and remain from the month of September to the month of March. They then depart to bring forth their young, and return with them in the month of June, when they are very lean and exhausted. They set off a second time in July, and proceed to the north, where they probably find plenty of nourishment, as they return in excellent condition in September. They also frequent the northern shores of America.*

Regarding its habits and dispositions, Fabricius says, "It is polygamous, and has its young usually on the ice. It bites hard, and barks and whines like a dog: it grows fierce on being wounded; but will weep on being surprised by the hunter, shedding tears abundantly. They fight furiously among themselves, inflicting deep wounds with their claws and teeth."

Sir Charles Giesecké remarks that this animal grows to the length of ten or twelve feet; which

* In the history of voyages, according to Desmarest.

statement is repeated by Mr Scoresby; who adds, "It often returns the attacks of its assailants, and, being defended by its hood from the stunning effect of a blow upon the nose, sometimes inflicts severe wounds on the person by whom he is attacked;"* a characteristic this which we have heard feelingly descanted upon by some who have been engaged in its capture in the Greenland seas.

In an economic point of view, we believe that this is one of the species which is most extensively made an object of pursuit, both in the Greenland seas and in Davis' Straits; and that, together with the Rough Seal, it is brought in by much the greatest numbers to this country. The natives of the regions it habitually frequents greatly esteem it. The skins of the young are converted into the most elegant dresses for the women, and are therefore highly valued; their great boats are covered with the skins of the aged, as also their houses; the teeth are used to head their hunting spears, and the stomachs are converted into fishing buoys.

We conclude this account of the Cristata in the words of M. de Blainville:—"We cannot readily conceive how any one could confound the projecting vesicular tubercle of which Fabricius speaks, with that modification of skin into which an animal can bury its head as in a monk's hood, and which we should naturally suppose would be found on the back of the head."

* Arctic Regions, vol. i. p. 511.

THE MITRED OR HOODED SEAL.

Phoca Mitrata.—CAMPER.

PLATE XV.

Phoca Mitrata, Camp. De Blainville. The Capuchin Seal, Cuv.

THE designation of *Mitred* Seal appears to have been first applied by Camper, and a cranium with this label was found in his museum, in 1811, by Baron Cuvier. This specimen was supposed to nave been procured in the Northern Ocean. Soon after making this observation, Cuvier received from Mr Milbert of New York a young animal of this genus, from which a skeleton was prepared, and which was found perfectly to correspond with Camper's specimen. The locality of its capture was not indicated. It has probably been from these materials that the plate in the Pl. de Dict. des Scien. Nat., of which ours is a copy, has been prepared, though this is not expressly stated. The learned author of the work here referred to has certainly been unfortunate in making this animal identical with the Crested Seal.

This specimen was only three and a half feet





PHOCA MITRATA
(Mitred Seal)

ong when it reached France, and, on removing it 'rom the liquor in which it had been transported, it ıppeared whitish, except on the back and legs, where t was of a slate brown hue, with a whitish reflec:ion produced by the points of the hairs, their base being brown, as well as the wool which covers their roots. After it was dry, its native oil gave it a decided yellow tinge. Its nails are large and whitish at the ends; its whiskers fine, short, and simple. The osteology of the cranium is very different from that of the Common Seal, as may be seen by comparing the wood-cuts on pages 128 and 196. Cuvier adds, "Upon the cranium and neck of this animal there is a very singular structure, which may explain what has been said concerning a kind of hood which it erects and swells up at pleasure. This structure is composed of numerous vessels, forming a tolerably thick net-work, which may contain a great quantity of blood, and which causes the region of the neck, and all over the shoulders, to appear more swollen than in most Seals. This structure is more minutely referred to by De Blainville in these words—'Mr Milbert sent to the *Jardin des Plantes* the skin of a Seal to which the head was attached, and which presented a singular peculiarity. Close to the occiput and the attachment of the neck, the skin was separated from the adjacent flesh by a considerable mass of vessels, or, in other words, by a sort of erectile tissue; an appearance which leads us to think that the skin in this region was susceptible of reflection, and, conse-

quently, of covering the head more or less, as far perhaps at the eyes, as is said of the Capuchin Seal.'"*

The dimensions, the habits, and even the locality of this singular species, seem to be nearly unknown; the only gleanings we have detected being the following.—"One species," says Crantz, "has a thick folded skin upon its forehead, which it can draw down over its eyes, like a cap, to defend them against the storms, waves, stones, and sand; it has a short, thick, black wool under its white hair, which gives it a beautiful grey colour."† Again, "In that sub-genus," says Mr Swainson, "named *Mirounga* by Mr Grey,‡ one species has the power of bringing forward a fold of skin, placed on the forehead in such a way as to cover the eyes when the animal is threatened."§ And, once more, in the words of Lesson, "The Fur Seal of Patagonia has a bump behind its head."‖

* Journal de Physique, t. xci. p. 289.

† Hist. of Greenland, vol. i. 125.

‡ Are not sub-genera sometimes made too precipitately? *Miouroung* is a name given by the aborigines of N. Holland to the Proboscis Seal; and, accordingly, it is made a synonym of that animal by Desmarest, and, we believe, Peron. "The fold of the skin on the forehead, so as to cover the eyes," however applicable to the *Mitrata*, can never, with any propriety, be applied to the Miouroung of Desmarest; and why interfere with his nomenclature?

§ Classif. of Quadr. p. 118.

‖ Dict. Class. d'Hist. Nat. t. xi. p. 33.

GENUS MACRORHINUS.



The cranium of the Genus *Macrorhinus* differs very much from that of other Seals, as do also the teeth, whose formulary is $\frac{2.1.5}{1.1.5}=30$.

The incisors are hooked like the canine, but are much smaller; the canine are very strong tusks, and the molars have simple fangs, and present this singular appearance that their crowns are smaller than their roots; they appear like a nipple on the round base which supports them.

M. de Blainville has given an interesting account of this cranium, from which we make a few extracts. "It is a foot and a half long, and the largest we have examined. The sagitto-occipital crest is raised into a sort of pyramid like that of the Rhinoceros. But that in which it differs from all others is its exhibiting a structure capable of sustaining a prolongation from the nostrils. In truth, the forehead is extremely prominent, somewhat like that of the Elephant, and probably for an analogous purpose. The nasal bones are very short, and those of the muzzle are longer than in any other kind of Seal, since they form from their anterior extremity to the border of the orbit more than two-fifths of the total length of the head; and this muzzle is nearly formed entirely of the maxillaries: the space between these bones is entirely hollow, which leaves an enormous nasal opening.*

* Lib. supra cit.

THE PROBOSCIS SEAL, OR ELEPHANT SEAL.

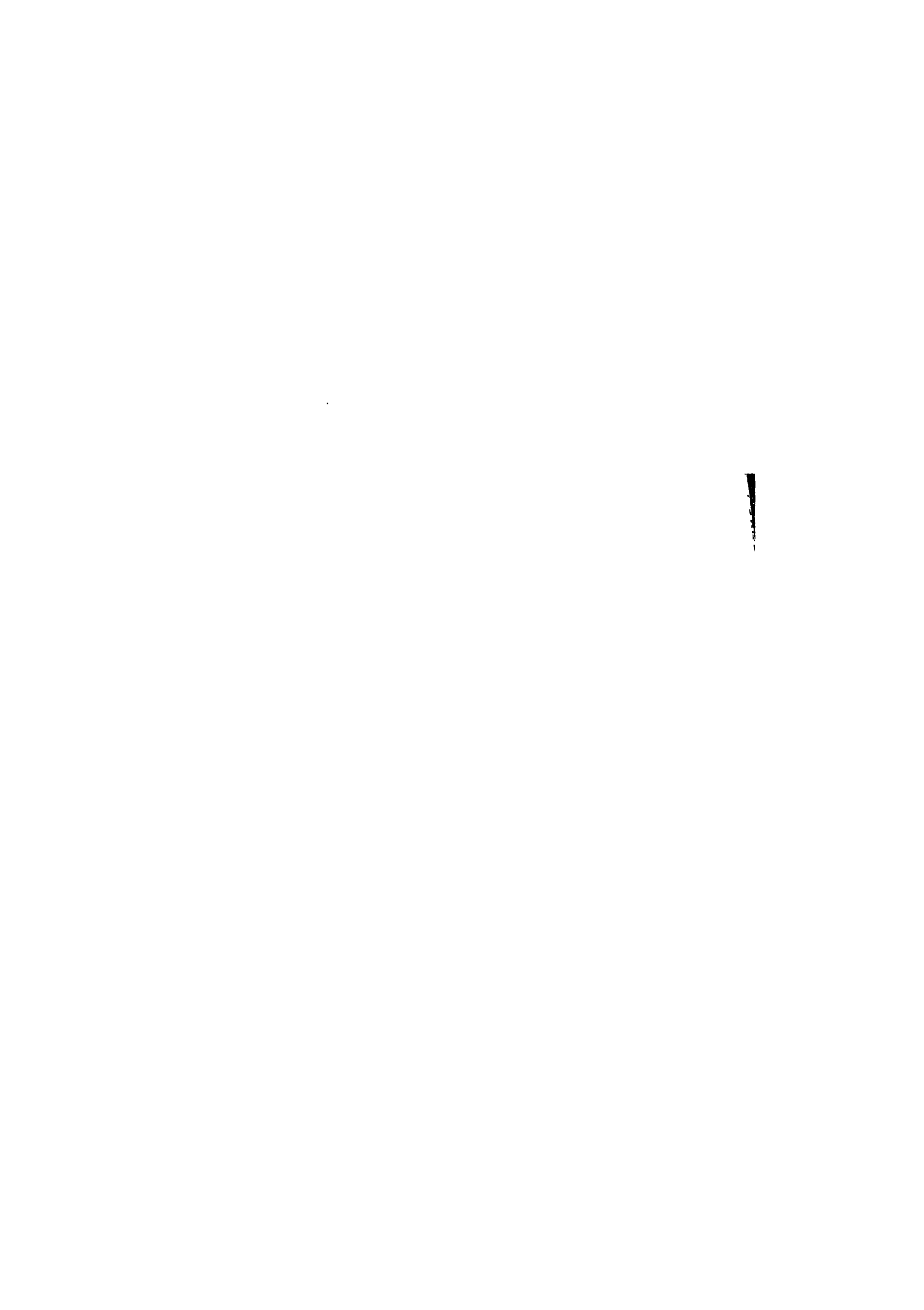
Ph. Proboscidea.—Peron.

PLATE XVI.—The Male.

Phoca Proboscidea, Peron, Des. 368. Ph. Elephantina, Molina, Elephant Seal of the English. Phoque à trompe of the French. Macrorhinus Proboscidius, F. Cuv. Miouroung of native Australians.*

This animal has received its specific name from the able Naturalist of the *Voyage aux Terres Australes*, on account of the very peculiar appearance of its short trunk. It is not, however, from this point of resemblance alone that it has acquired the name of Sea-Elephant, but also because it is by much the largest of its kind, in this respect more than doubling the dimensions of its terrestrial namesake, reaching the enormous length of twenty-five and thirty feet, maintaining withal a proportionate thickness. From being an object of great commercial importance it has attracted much attention, and

* This is also the Sea-Lion of Anson, and the Sea-Wolf of Pernetty.







PHOCA PROBOSCIDEA
(or Elephant Seal)
South Seas.

ːe it has received a minute examination least one Naturalist. Accordingly, we e our description chiefly from the interest-unt of Peron.

Proboscis Seal must undoubtedly stand at l of all the Phocidæ, as the largest and narkable of those hitherto known. It has rmous dimensions of twenty, twenty-five, ı thirty feet in length, with a circumference fifteen to eighteen feet. Its colour is some-reyish, sometimes bluish-grey, and more ackish-brown. The absence of every thing ernal ears; great whiskers composed of oarse hairs, very long, and twisted some-e a screw, witn other similar hairs over , supplying the place of eye-brows; eyes e extremely large and prominent; strong erful swimming paws, having at their mar-small black nails; a very short tail, which t hid between two flat horizontal fins; these distinguishing traits of this strange ani-ut the singular prolongation of the nostrils ains to be mentioned. When the animal ate of repose, its nostrils, shrunk and pen-ve only to make the face appear larger; never he rouses himself, when he respires , when about to attack, or wishing to de-nself, the proboscis becomes elongated in of a tube to the length of about a foot; not only is the countenance changed, as

may be seen in the drawings, but the character of the voice is modified in a not less striking manner. The females are destitute of this organization, and have the upper lip even somewhat cleft. In both sexes the hair is exceedingly coarse and close, and hence cannot be compared in value with the finer skins of many other Seals.

THE FEMALE.

PLATE XVII.

The following particulars have kindly been communicated to us by Dr Trail:—"The Great Seal at Liverpool was brought from New South Shetland about ten years ago. They abound on the coasts. The sailors find the male usually surrounded with several females; and they avoid wounding him, as the females seldom abandon the male, though they see the butchery of their own sex, but will leave the shore with the flight of the male.







The males are pugnacious with each other for their females. The one in the Liverpool Museum is not reckoned above the usual size of a full grown female."

To the account of the external appearance by Peron, we are happy we can add the following valuable description, by our intelligent publisher, of the same female of this species, preserved in the Liverpool Museum, and which was put up under the able direction of Dr Trail:—"I have taken," says Mr Lizars, "a sketch of this Great Seal, and a wonderful monster it is;—compared with any ordinary Seal three or four feet long, it appears exactly like an Elephant when compared to a sheep. The animal is laid out at full stretch, and measures from the point of the nose to the end of the hind flippers fifteen and a half feet; but when the bones were *in situ* it must have been longer, I should say fully sixteen and a half feet. Its greatest circumference, taken behind the fore-paws, is ten feet three inches; but this also must be far short of what it was in the living state, so that I should say it must have amounted to twelve feet. If you measure across between the tips of the paws, it appears the animal is nearly as broad as it is long, as in the human frame. The whole surface, excepting the nose, is entirely covered with very short hair, dark olive brown above, and shading away to a yellowish bay colour below upon the belly; upon the under part of the cheeks and chin the colour approaches to a

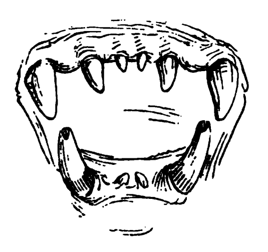
full dark-brown, and is rather longer than elsewhere. The hair lies in patches, in all directions, which gives a spotted appearance to the whole body, making it somewhat like watered silk, but the colour of the individual hairs is the same olive brown and yellowish bay.

"The head is large for a Seal, and well marked, much like our Sea-Lion in the College Museum, (No. 19.) but without the beard and mane. The nose is not in the smallest degree prehensile, not more so than that of a Labrador dog, to which the head also has some resemblance, I mean the smooth skinned Newfoundland dog, which is not very common. There are four fingers and a sort of thumb on the fore flippers, with perfect nails upon



each; the hind toes have not even the rudiments of nails, but are beautifully constructed, like the web of a duck's foot, and formed to expand, so increasing the power of natation. Its tail is very short, not more than six inches long. The orifice of the ear

is well defined, although very small, not sufficient to allow the little finger to enter, and the hairs are so arranged as to turn inwards. The teeth are arranged, and shaped as below. Between the canines, in



the upper jaw, are four incisors, conical, and of very different sizes; there are also four grinders, (probably five is the normal number,) of the form, size, and at the relative distances, here represented.



The grinders of the lower jaw are precisely similar, five on each side; and there are only two very small incisors between the canines. The points of the canines are much worn. You will probably be of opinion that from the construction of the mouth the animal must swallow its victims without mastication, and that with a single bite with such canines it will dispatch the life at once."

Frequenting only the Southern hemisphere, this Seal has a peculiar delight in its most desert islands; and what is strange, for some of these in preference, and to the exclusion of others. Thus, in a particular group, consisting it may be of several dozens, it will be seen only on two or three. It is not found on the vast continent of New Holland, nor in Van Diemen's Land, except as driven on shore by tempests. It has been found in numerous herds in Kerquelen's Land, upon S. Georgia, the States Islands, where it is regularly fished, also upon Juan Fernandez, South Shetland, and the Falkland Islands, where, however, there are but few. The only explanation of these prefer ences which we can suggest is, that they may perhaps depend on the presence of those fresh water lakes, or rather swamps, in which they delight to wallow. As the result of all the observations hitherto made, it may be remarked, that these powerful animals are confined between the 35° and 55° of S. latitude, and that they exist both in the Atlantic and Southern Oceans.

The Elephant Seal is not, however, a fixed tenant of its favourite haunts; for, avoiding the extremes of heat and cold, in the commencement of winter it leaves the South, and approaches more temperate regions, and with the summer heats it again retires towards the pole. A month after this voyage the females begin to bring forth their young; when they are usually all assembled near the shore, and are surrounded by the males, who do not allow them

to return to sea. Nor do they revisit that element till the period of lactation is over; and it has been stated that, if at any time the mothers appear to be separating themselves from their young, the males pursue, and by biting, force them to remain at their post. According to Peron, they have only one a. a birth, very rarely two, whilst Anson states they have generally two. The young at birth are between four and five feet long, and weigh seventy pounds, and even then the male is larger than the female. In suckling it the mother reclines upon her side. The period of lactation continues seven or eight weeks, during which period no member of the family either eats or goes to sea. The growth of the young one is very rapid: in the first eight days it doubles its dimensions, and increases to more than twice its original weight. This rapid development is of course at the expense of the mother, and as she does not make up her loss with any kind of food, she manifestly wastes away from day to day, and has sometimes been observed to sink under it, though it is difficult to determine whether this fatal result arises only from the great drain, or from some fatal disorder. The first teeth appear at the end of a fortnight. and in four months they are all present. The growth of this species is so rapid, that at the end of the third year the young animals have attained the length of from eighteen to twenty-five feet, which is the ordinary limit of their growth, and after this they increase principally in fatness.

When the young are six or seven weeks old they are conducted to the sea, the shores being abandoned for a time. The whole troop moves in concert: at this time they all swim sufficiently gently, and though they often disappear under water, yet are they forced at short intervals to rise to the surface for the purpose of respiration. When the young wander away from the herd, they are immediately pursued by some of the older ones, who, by biting and otherwise, oblige them to return to the group.

After remaining three weeks or more at sea, to familiarize the young with this element, and to recruit their exhausted strength, the Sea Elephants return a second time to the coasts, for the all important object of reproduction. It has been already stated, that at the age of three years these animals have acquired all their growth; and it is then also that the remarkable proboscis of the male is developed. Previous to this event he consorted with the females; and this appendage may therefore be regarded as an index of virility.

During the season of their amours, the harmony of the community disappears, and is unknown during this time of inebriation. Animated by a common passion, the males give themselves up to bloody contest; they fight with the greatest fury, but always in single combat; and, as Steller remarks of a congener, if two assail one, the others haste to the help of the oppressed individual, indignant at the foul play. Their mode of battle is very singular.

The two rival giant knights waddle heavily along; they meet, and join snout to snout; they then raise the anterior portion of their body as far as their fore-paws, and open their immense mouths; their eyes are inflamed with rage, and they dash against each other with the greatest momentum in their power; now they tumble one over the other, teeth crash with teeth, and jaws with jaws; they wound each other deeply, sometimes knocking out each other's eyes, and more frequently their tusks; the blood flows abundantly; but these raging foes, without ever seeming to observe it, prosecute the combat till their strength is completely exhausted. It is seldom that either is left dead on the field, and the wounds they inflict, however deep, heal with inconceivable rapidity. During these violent combats, the females, with apparent indifference, wait the issue for the lord who is to rule over them. He, on the moment of his victory, proud of his success, hastes into the midst of the timid group, and reigns with undisputed empire. The period of gestation appears to be nine or ten months.

In the meanwhile, as the sun approaches the antarctic circle, and the heat proves too much for them, the young having been brought forth during the smiles of spring, and having now become familiar with their natural element, the whole tribe sets off for the South, there to remain till the threatenings of frost induce them to return to more genial skies. It may be added, however, that

a few, probably retained by weakness, [illegible] remain in the milder climate.

Most of the Seals, as we have seen, prefer rocks and ice-islands for their supramarine habitation; but the proboscidiæ, on the contrary, confine themselves to the sandy flats of the shore; they seek also for the neighbourhood of fresh water, in which, though it be not altogether essential to them, they delight to plunge, and appear to drink with pleasure. They sleep alike when extended on the sand, and when floating upon the surface of the waves. When assembled in great troops on land, and reposing, one or more of their number is constantly on the watch: When danger threatens, they immediately give the alarm, and then all hasten to the beach, to precipitate themselves into the protecting wave. Nothing is more singular than their gait. It is a kind of crawling, in which their body appears to tremble, like an enormous bladder full of jelly, so very thick is the coat of lard which covers them. And not only is their gait slow, and apparently painful, but every fifteen or twenty paces they are forced to halt, partly from fatigue, overwhelmed with their own weight. If, during their flight, any one gets before them, they instantly stop; and if, by repeated blows, they are forced to move, they appear to suffer mucn. It is remarkable, that in these circumstances their pupil, which usually is of a bluish-green colour, becomes of a deep blood-red hue. Notwithstanding all this difficulty

of progression, the Sea-Elephants, in King's Island, ucceeded in ascending the low downs, of some fifteen or twenty feet elevation, where small ponds of water existed.

The cry of the female and the young male resembles the lowing of an ox; but, in the adult males, the proboscis gives such an inflexion to their voice, that it is something like that kind of noise which may be produced by gurgling. This hoarse and singular cry is heard at a great distance, and is wild and frightful; and in these dreary regions during the stormy nights which sometimes occur, on being suddenly roused from slumber by the confused bellowings of these colossal animals, congregated near your bivouac, you can scarcely resist being seized with a momentary panic.

We have already noticed that these animals avoid great heat; and, unlike most of the race, they appear to be greatly incommoded by the direct rays of the sun. Hence, when lying during the day on the beach, they are noticed to take particular delight in covering themselves with great quantities of sand, moistened by the sea water, which they throw over them with their paws till they are entirely enveloped in it. It is under these circumstances especially, that, with Forster, we might mistake them for so many enormous rocks.

Sea-Elephants are of an extremely mild and docile disposition, so that one may pace about among them without fear. They never think of attacking man, unless they are provoked by the rudest vio-

lence. And it is not only on shore they present this gentle character; for the fishers affirm, that when Seals of smaller species come and swim amidst them, they never offer them the least injury. Men may, even without risk, bathe in the midst of a herd of them, and the fishers were in the habit of doing so. They are also capable of forming a real attachment, and of very considerable education. On one occasion, an English sailor selected a young one as a pet, and treated it kindly for a few months. At the end of this period he had so completely tamed it, that it came at his call, allowed him to mount upon its back, and put his hands into its mouth. In a word, this gentle creature did all that was in its power for its protector, and bore every thing from him without offence. It must have been on facts such as these that Penrose expected credence for the statement, "that his crew rode on these animals as they would do on horses, and when they did not swim sufficiently rapidly, forced them to quicken their progress by the spur."

Though nothing is definitely known as to the natural term of life of these Seals, yet some, who are familiar with them, have estimated it at twenty-five or thirty years. It has been remarked, that when about to die, feeling themselves indisposed, they leave the ocean, and advance further in shore than usual, where they lie down among brushwood, and wait death, as if they wished to resign life in the situation they first received it. Sometimes they meet with fatal accidents. Surprised by tempests,

they are precipitated against the rocks, and, in spite of every effort, are dashed to pieces. They encounter also other dangers in the depths of the ocean. The fishers state that they sometimes unexpectedly see them ascend from beneath the wave in the greatest apparent alarm, many of them being covered with wounds, and dyeing the water with their blood. Their panic concurs with their wounds, in proving they have been hunted by some formidable foes. But what are these? The fishers unanimously agree that they know no animal that could make such large and deep wounds; they therefore presume that these contests must be carried on with some unknown monsters dwelling far from the coasts; whilst they at the same time allow they have never otherwise been able to detect any trace of them. They add, that it is doubtless to preserve their young from these attacks that the Sea-Elephants prevent them, with such assiduity, from diving too deeply, or wandering too far from the flock, as formerly noticed.

But the most formidable of all their enemies is encountered upon land, and this enemy is man. We have already stated, that they are sometimes forced ashore in New Holland and Van Diemen's Land. The moment that the native savages perceive one they surround it, while it in vain attempts to regain the sea. Its retreat thus cut off, armed with long pieces of wood burning at one end, the savages attack the unfortunate brute. As soon as he opens his mouth, showing the only weapons with

which he is armed, they all at once force many of these flaming torches down his throat. The unfortunate Elephant gives utterance to the most melancholy bellowings, his whole frame is agitated with violence, and he dies of suffocation and agony. Joyful shoutings ascend on every side, and the cruel conquerors set themselves down to devour their prey. Each tears away what he can; he gorges himself and sleeps; he awakes, and eats, and sleeps again. The feast may have united tribes which were inimical, and for the time their hatred is extinguished; but their revels over, their animosities revive, and murderous combats usually terminate their disgusting orgies.

But these savages are not their most formidable foes: their voracity they can generally avoid; but they find no escape from mercantile cupidity, which appears to have vowed complete extinction to the race. The fishers use in destroying them a lance twelve or fifteen feet long, with a sharp iron point of about two feet. With great address, they seize the moment when the animal raises his left fore-paw to advance, and plunging the weapon to the heart, he immediately falls down drenched in blood. The females rarely offer the least opposition, their defensive weapons being feebler still than those of the male. When attacked, they seek to flee; if prevented they become violently agitated, their countenance assumes the expression of despair, and they weep piteously. "I have myself," says Peron, "seen a young female shed

tears abundantly, whilst one of our wicked and cruel sailors amused himself at the sight, knocking out her teeth with an oar, whenever she opened her mouth. The poor animal might have softened a heart of stone; its mouth streaming with blood, and its eyes with tears." To this quiet submission there are a few rare exceptions, as when a mother is interested about her offspring. Thus, it is recorded in Anson's Voyage, "One day a sailor being carelessly, and, we add, cruelly, employed in skinning a young Sea-Elephant in its mother's presence, she came upon him unperceived, and getting his head into her mouth, scored his skull in notches in many places, and thereby wounded him so desperately, that, though all possible care was taken of him, yet he died in a few days."*

It is not on account of its flesh that this animal is so earnestly pursued: this is not only black, oily, and indigestible, but it is also impossible almost to separate it from the lard. The tongues alone supply really good aliment; and they are salted with care, and esteemed in the market. The heart is sometimes eaten, but it is hard and indigestible; and with regard to the liver, which is esteemed in some Seals, it would appear, after repeated trials, to be hurtful. The skin of the Seal is considered valuable, though not esteemed for its fur, its thickness and strength recommend it much, and hence it is extensively employed for carriages and horse har-

* Book ii. chap. 1.

ness. It is the oil, however, which is chiefly prized by the fishers, and this is the immediate object of their enterprising expeditions; nor need we wonder when we think either on the quantity, the quality, or the facility with which it is prepared. In fact, the Sea-Elephant does not yield to most of the cete in the thickness of its blubber, which is often more than a foot, and supplies a prodigious quantity, amounting to 1400 or 1500 pounds in the largest individuals. Its preparation is very similar to that of the whale oil, except that it is always carried on upon land. All agree that its quality is most excellent. It is limpid, inodorous, and never becomes rancid; in cooking, it imparts no disagreeable savour; and in burning, it produces no smoke nor smell, and is slow of combustion. In England, it is used for the softening of wool and the manufacture of cloth; and it is also much used in China.

This fishing has been prosecuted in many quarters: King's and New-Year's Island were in full activity at the commencement of this century; a third station existed at Kerquelen's Land, a fourth in the Sandwich Islands, whilst others were forming in the States' Islands and elsewhere. Thus, this gigantic species was attacked in many points at once; its numbers have been thinned with the greatest possible rapidity, and its entire extinction was and is to be dreaded.

This interesting sketch of the Zoologist of *Le Geographie* is so carefully and successfully drawn, that we have been studious not to interrupt the

narrative. Our limits forbid our offering any reflections ; nor can we do more than barely refer to some interesting notices respecting this Seal which may be found in Anson's Voyages. Pernetty's observations are so curious that we cannot wholly omit them. "When you penetrate," he observes, "the thickets of brushwood to which they retire, and in which they form their lairs, you find them almost always asleep upon the dry leaves. At first I had no adequate conception of their prodigious size. When at the distance of about a thousand yards they looked like little mountains, and it was only on coming close that I formed a correct idea of them. After minutely examining one, M. de St Simon led me to the bank of a brook overgrown with reeds and rushes. On entering, he immediately shot one about the size of a stout calf. Sounds instantly assailed us on all sides, like the grunting of hogs, the bellowing of bulls, the roaring of lions, and the deepest notes of a great organ. We were so astounded that we hesitated to proceed; but being satisfied that all the cries issued from these same animals, and that they might be approached without risk, provided you did not go too near, we penetrated among the reeds. About thirty appeared, lying about, sometimes two or three in the same trough. M. St Simon shot eleven of them. Those which were not wounded remained quietly in their lairs, without exhibiting either fear or fury. The smallest we killed were between fifteen and sixteen feet in

length. On another occasion, when some of these animals were approached, two of our young people amused themselves by throwing large pebbles into their gaping mouths, which they swallowed as we would have done strawberries. They move with great difficulty, though their head and neck have ready play. It would not be safe to go close to their lair, as they might cut a man in two at a single bite. Their eyes are the most beautiful in the world, and their aspect is not at all ferocious The colour of some of them is white, others are dun-coloured, but most are of the same hues as the beaver; a few were like the light hind."*

We shall close our account of these gigantic amphibia by a few sentences from Weddell. The inactivity and extreme lethargy of those Seals when on shore is astonishingly contrasted with their sagacity and agility when at sea. They have been known to keep a boat from landing, by intercepting it in the water, when the crew had no fire-arms; and frequently when one is pricked with a lance, it will attack the boat with the greatest ferocity. It is curious to remark that the Sea-Elephant, when lying on the shore, and threatened with death, will often make no effort to escape into the water, but will lie and shed tears, merely raising its head and looking at its assailant. In close contest every

* More ample details will be found in Voy. aux Malloun, t. ii. p. 40.

an effort would be of little avail for its destruc-
unwieldy though it be, were it to rush for-
l and exert the power of its jaws: for this in-
is so enormous, that, in the agony of death,
es are ground by them to powder.

THE OTARIES.

We now proceed to the second great division of the Phocidia, the *Otaries;* and in addition to what has been said on p. 98, we may now add, that their fore-paws, as if intended exclusively for swimming, are generally placed farther back in the body than in the true Phoca, giving them the appearance of possessing a longer neck; the fingers also are more hid in the skin, and they have no nails; the hind feet have the membrane or web prolonged beyond the nails into five long straps or ribbons, (see p. 55,) and the under surface of all the extremities are devoid of hair, like the sole of the foot, and are deeply marked with rugæ.

We turn first to the animals which have received the popular name of Sea-Lion, a name which has been applied by voyagers to Seals of large dimensions for a variety of fanciful and absurd reasons. Thus Funnell, in his narrative of that voyage which goes under the name of Dampier's, applies the ap-

pellation to a great Seal he encountered, because "he roared like a lion;" and others have conferred it upon other animals, because they had teeth like lion's teeth, and so forth. Steller, who, in 1742, first gave a detailed account of some of these larger Seals, described one under the name of Dampier's Sea-Lion; but in looking to Funnell's account, it is evident that no one could thereby distinguish the species; and from other considerations, it is almost certain it had reference to the Proboscis Seal just described, (p. 208,) which, as we have seen, was called Sea-Lion by Anson, and Sea-Wolf by Pernetty. But this is the least of our present confusion. Pernetty gives an account of a Sea-Lion which he encountered at the Falkland Islands; and Forster, in his account of Cook's Voyage, supplies another of a somewhat similar animal which they met with at Staten's Land. From the general resemblance merely, Pernetty regarded the great lion of the Falkland Islands as identical with Steller's; at the same time remarking that there were several species of Sea-Lion;* and Forster was disposed to identify the species he saw both with Steller's and Pernetty's; whilst Peron and other naturalists, who have paid great attention to these amphibia, strongly contend that there are three or more different kinds. Analogy would certainly lead us to conclude that the Seals of such different regions are themselves different, and without entering further into discussion upon

* Loc. c. p. 38.

this point at present, we merely state that we think it best to follow the example of Peron, and of the Dict. Classique, and to treat of these species severally. We shall resort, as much as possible, to the original sources of information, and shall thus, in a great degree, put our readers in a condition to form their own judgment.

GENUS PLATYRHINCUS.

We have now arrived at the sixth genus of M. F. Cuvier, concerning the osteology of which he confesses that nothing satisfactory is known. He had before him a cranium, which, by the bye, he does not indicate, which was different from all the others, and which was labelled as a Sea-Lion's; and without attempting to refer it to any one species, he establishes upon it the present genus. This, of course, was only groping in the dark, though it was at the same time making progress, so far as unequivocally to indicate another kind of Seal. Since that time, other not less extraordinary crania have been discovered, and of some of these we shall avail ourselves, at the same time begging attention to the

fact, that these several specimens have not been satisfactorily referred to any distinct species, or, it may be, genera.

In connection with the Sea-Lion of Steller, we venture to prefix a copy which De Blainville took of a cranium in the London College of Surgeons, and which was labelled, "*Sea-Lion from the Island of Tinian*—from Commodore Byron." This island, one of the Ladrones, in lat. 15° N., borders on the N. Pacific Ocean, though still at a great distance from Behring's Island and the Kuriles, which were the summer residence of Steller's Lion; from which, however, they went southwards on the approach of winter.

The following is an abridgment of Blainville's account of the cranium, which wanted the lower jaw. It is more than a foot long, and apparently belonged to an adult animal; its crests are remarkably strong, indicating the attachment of powerful muscles; the forehead and chaufrin are almost horizontal; the opening for the nostrils is also horizontal, and of middling size; the muzzle is about one-third of the length of the whole head; the orbit also is forward, so that the molars are carried far back. The teeth are ($\underline{3.\ 1.\ 6.}$;) six incisors in a straight line, the external much the largest, and like small canines; the canines are of great size; and then, without any interval, six molars, almost equal in length, and augmenting in thickness from the extreme ones to the third; they appear to have been all nearly pointed and conical. M. F. Cuvier indicates Steller's Lion as the type of this genus, and the above description agrees with Steller's very minute account of the teeth.



SEA-LION OF STELLER.

Phoca Jubata.—GMELIN.

Otaria Stelleri, Less. Phoca Jubata, Gmel. Desm. Plat. Leoninus, F. Cuv. Dampiero Leo Marinus, Steller. Sea-Lion of Steller.

ACCORDING to Steller,* the length of the full-grown Sea-Lion of the North is about fifteen feet, and its weight about sixteen hundred weight. The males have stiff and crisp curled hair about the neck, of which the females and young are destitute. The females are shorter and more slender than the males. The hide is very thick, and covered with coarse strong hair of a reddish colour like that of many cows, which gets paler in the aged, and is of a deeper hue in the young; in the females it has a bright ochre tint, and

* Nov. Comment. Acad. Scient. Petropol. t. ii ad annum 1749.

is sometimes of a chesnut colour in the young. The head is large; the nose stretched out, and somewhat turned upwards; the eyes are very large, having the inner angle stained, as it were, with cinnabar from the size of the caruncle; the bright pupil sparkles of a green colour, and the rest of the eye is white like ivory; the eye-brows are bushy; the external ears conical, upright, large, and distinct. That which especially, in addition to the colour and size of the animal, entitles it to the name of Sea-Lion, is its mane of erect and undulating hair, which augments its apparent size, and greatly increases its beauty of form, like that which is seen in the king of beasts. In the upper jaw there are six incisors; four of these have double or twin summits, or are bifurcated; then succeeds one, canine-shaped on each side, more than an inch long, very sharp, and curved inwards; then there are the true canines, twice as long as the last, and very sharp; then six molars, shaped like canines, with a small heal before and behind; they are almost two-thirds of an inch long. The formulary is $\frac{3.\,1.\,6.}{2.\,1.\,5.}=36$. The shape is exhibited on p. 236.

This Sea-Lion inhabits the eastern shores of Kamskatka and the Kurile Islands, and as far as Matsmai, where Captain Spunberg observed a certain island of the most picturesque form, bordered with rocks resembling buildings, and swarming with these creatures, to which he gave the name of the Palace of Sea-Lions. They abound in Behring's Island in the autumn, whither they resort for the bringing forth of their young. Steller also saw

them in abundance on the coasts of America in July They are not so migratory as some other species, but still have their summer and winter quarters. They live chiefly on rocky shores, and desert rocks of the ocean, on which they climb, and their roaring is said to be useful in the foggy weather of those regions, by warning navigators to avoid destruction.

Though the males have a terrible aspect, yet they take flight on the first appearance of man; and if surprised in their sleep, they are panic-struck, sighing deeply, and in their attempt to escape, get quite confused, tumble down, and tremble so much, that they are scarcely able to move their limbs. If, however, reduced to extremity, they grow desperate, turn on their enemy with great fury and noise, and put even the most valiant to flight. On this account the Kamskatkans never attack them in the open sea, nor without many precautions on land. They usually watch their opportunity to find one asleep, when the most courageous amongst them strikes their harpoon into the creature, and takes to his heels as fast as he can; his comrades then fasten the line attached to the harpoon to a strong stake, and its flight thus arrested, they shoot at it with arrows, and dart their lances, until being nearly overcome, they venture in and despatch it with their clubs. They often also employ poisoned arrows with effect. It is at the same time true that many of the natives of those regions, from the great size and power of these animals, attach a kind of glory to the destruction of a Sea-Lion, and that some of them will hunt

great peril to themselves, for many successive by sea and land, without any other compass the stary heaven.

ough these animals are naturally savage and l, yet in the long-run they become familiar man. Thus Steller tells us that he lived for ys in a hovel in the very midst of them, and soon became intimate. They observed what is doing with great calmness, laid themselves close beside him, and would suffer him to seize cubs. He had thus an excellent opportunity of ing their habits, and once saw one which had robbed of its mate fight with the whole herd for days, and escape at last with more than a hun- wounds. They allowed the whelps of other Seals rt near them without offering them the least in- The old showed but little affection for their g ones, and sometimes, through mere careless- would tread them to death; they also suffered to be killed before their eyes without any concern entment. The cubs, too, on land are not sportive hose of some other species, but are almost al- asleep. They are taken to sea when some- advanced: when wearied they mount on their er's back, whence the male often pushes them custom them to the exercise. The males treat females with great respect, and often caress . They are polygamous, but usually satisfy selves with from two to four females a piece. older ones bellow like bulls, the younger bleat sheep.

Their food is fish, the lesser Seals, Sea-Ottars, and other marine animals. During the heat of summer the old males almost entirely abstain from food; they indulge in indolence and sleep, and become excessively emaciated.







THE SEA LION of the SOUTH-SEAS
According to Forster.

; SEA-LION OF FORSTER.

PLATE XVIII.

Buff. Otaria Leo Marinus, Forsterii, Lesson. O. bata, Des. The Sea-Lion of Forster.

R is the principal, if not the only, origi-
y among naturalists, for this great Lion
southern hemisphere. He met it when
ng Captain Cook in his second voyage,
ı interesting description of it in his nar-
ıt expedition.* Mr Forster, or rather per-
her, transmitted about the same time to
'on a detailed account of this animal.
th drawings taken from nature, both of
used in the supplement of his *Histoire*
where, however, this document is unfor-
xed up with Steller's account just given.
erefore reject what has been copied from
l give only what appears to have been
ı Forster's communication.

&c., by G. Forster, 4to, Lond. 1777, vol. ii. 512.

After describing the coat and mane very much as Steller had done, Buffon proceeds—"It has no fur or short woolly hair under the longer hair, as is found in the Sea-Bears. The weight of the full-grown male is about sixteen cwt., and its length between ten and twelve feet; the females are much more slender and shorter, usually about seven or eight feet long. They are every where equally thick, and look like great cylinders more suitable for rolling than for walking. Moreover, this rounded body scarcely seems to be properly trimmed, because, oeing covered with an immense quantity of fat, it immediately assumes all the inequalities of the soil and rocks over which it moves or rests while taking repose. The head appears too small in proportion to the body; the muzzle is not unlike that of a large mastiff, being somewhat elevated and truncated at its extremity; the upper lip overhangs the lower, and both are supplied with long coarse black whiskers, which become white with age. The ears are conical, about six or seven lines long, the cartilage is firm and stiff, and yet they are somewhat curled at the margin; they are covered with nair externally, and are smooth and destitute of it nternally. The eyes are large and prominent, so are the caruncles, which have a bright red colour, so that the eyes appear inflamed; there is a nictitating membrane which covers all the eye at the will of the animal. The tongue is somewhat forked at the extremity." The teeth are made so exactly to correspond with Steller's description, that though

no reference is made to it, no one can doubt it is a mere copy.

The Sea-Lion has not so much fore-paws as fins proceeding from the sides of the chest; they are smooth, of a black colour, without any appearance of fingers, with a mere trace of nails; they have the shape of roundish tubercles, and are of a horny consistency; they are situated at about one-third from the extremity of the paw, the whole form of which is that of an elongated triangle truncated at its point; it is quite devoid of hair, and deeply striped on its under surface. The posterior extremities are not very unlike the anterior; they have the same black skin underneath, and clearly include five very long and flat toes, which are terminated by thin compressed membranes which extend beyond their extremities; the small nails, which are placed at the end of the proper fingers, are of no more important use than to enable the animal to scratch itself.

The illustrious Cook himself states, that the largest of these animals he met with were not more than twelve or fourteen feet in length, and perhaps eight or ten in circumference: the female is not half so long, and is covered with short hair of an ash colour. He adds—"It is not at all dangerous to go among them, for they either fled or lay still. The only danger was in going between them and the sea; for if they took fright at any thing, they would come down in such numbers, that if you could not get out of their way, you would be run over. When we came suddenly upon them, or waked them out of

their sleep, (for they are sluggish, sleepy animals,) they would raise up their heads, snort and snarl, and look fierce, as if they meant to devour us; but as we advanced upon them they always ran away, so that they are downright bullies."*

Forster remarks, that the "rocks along the shore, in New-Year's Harbour, were covered with multitudes of these Seals, which, from their manes, well deserved the name of Sea-Lions. We put into a little cove under the shelter of some rocks, and fired at some of these fierce animals, most of which immediately threw themselves into the sea. Some of the most unwieldy, however, kept their ground, and were killed by our bullets. The noise which all the animals of this kind made was various, and sometimes stunned our ears. The old males snort and roar like mad bulls or lions; the females bleat exactly like calves, and the young cubs like lambs. They live together in numerous herds. The oldest and fattest males lie apart, each having chosen a large rock to which none of the rest dare approach without engaging in furious combat. We have often seen them seize each other with a degree of rage which is not to be described; and many of them had deep gashes on their backs, which they had received in the wars. The younger active Sea-Lions, with all the females and the cubs, lie together. They commonly waited the approach of our people; but so soon as some of the herd were

* In Kerr's Voyages, vol. xv. p. 16.

killed, the rest took flight with great precipitation, some females taking off a cub in their mouths, whilst many were so terrified that they left them behind. When left to themselves, they were often seen caressing each other in the most tender manner, and their snouts often met together as if they were kissing. They come on shore on these uninhabited spots to breed, and do not feed during their stay on land, which sometimes lasts several weeks; they then grow lean, and swallow a considerable quantity of stones to keep their stomach distended. We were surprised to find the stomachs of many of them entirely empty, and those of others filled with ten or twelve round heavy stones, each the size of two fists."

Each of the great herds of these amphibia is composed of an adult male, and a number of females and their young. The number of females would appear to vary. Cook, in his own account, says—"The male is surrounded by from twenty to thirty females, and he is very attentive to keep them all to himself, beating off every male who attempts to come into his flock. Others, again, had a less number, some no more than one or two; and here and there we have seen one lying growling in a retired place alone, and suffering neither males nor females to approach him. We judged that these were old and superannuated."* Forster reckons the number of females at ten or twelve, and from fifteen

* Cook's Second Voyage, P. iii. B. ii. Ch iv.

to twenty young ones of both sexes. They swim about all together at sea, and also remain united when they repose on land. According to Forster, the sight or voice of man makes them flee, and throw themselves into the water; for, although they are large and strong, they are also timid; and when a man attacks them even with a good stick they rarely defend themselves, but retreat precipitately. They never commence an attack, or act on the offensive, so that a person may be in the midst of them without any apprehension.

The females never fight with each other, nor with the males, and seem to live in entire dependence upon the chief of the family; but when two grown males, or rather two heads of families, engage, all the females attend in their train, to witness the contest; and if the chief of another troop interfere with the combatants, either on one side or the other, his example is immediately followed by many other chiefs, and then the combat becomes almost general, and terminates only in a vast effusion of blood, and often even in the death of many of the males, whose females are instantly joined to the family of the victor. It has been remarked, that the very aged males do not interfere in these struggles; they seem aware of their weakness, and keep at a distance, remaining quiet in their favourite retreat. The lionesses endeavour to make their escape from the thick of the fight. Their maternal affection does not appear to be so strong as in some of their congeners, although Forster stated

in his private memoir to Buffon, that he had sometimes seen them defend their young at the expense of their lives.*

We in this place introduce a representation of a cranium, which must be regarded as interesting by the student, which, according to Baron Cuvier, probably belonged to the Sea-Lion, and we will venture to add to the Sea-Lion which is next to occupy our attention.

It came to Paris from the Museum of M. Faujas. "The cranial front," says Cuvier, "is short when compared with the muzzle, as is the whole head when compared with its height. The zygomatic arch is short and high, as is likewise the lower jaw, with an acute posterior angle, and the whole ought to give a more than usual rounded external form."†

* Buffon's Hist. Nat. Suppl. t. vi. p. 365.
† Oss. Foss. v. 222.



THE SEA-LION OF PERNETTY.

PLATE XIX.

Otaria Pernetti, Less. Platyr. Leoninus, F. Cuv. O. Jubata, Des. 380. O. Leonina, Peron, Sea-Lion of Pernetty.

We now come to the Sea-Lion of Pernetty, and if any credit is to be attached to the drawings of Forster, as published by Buffon, we think there can be little doubt that Forster's Lion is a different animal from the present. Even before we had examined the valuable specimen, from which our representation is taken, we were disposed to regard Pernetty's Lion as distinct from the other. We draw this inference from Pernetty's own description and plate. This description will be immediately given; and we shall here only note that he expressly says—"Il y a plusieurs sortes des Lions marins,"* and this after setting apart the Sea-Elephant, and the Sea-Bear, which comes next under review. With regard to

* Lib. s. cit. ii. 28.





THE SEA LION OF PERNE
Edin.r Roy Mus
Falkland Islands

his figure, we always thought that it argued more inattention and error than we usually find in the learned Benedict, to suppose that he would represent Forster's Lion by the figure he has supplied. It is true his figure has been subjected to much disparaging criticism, and yet it would seem to be the best likeness of the animal which has hitherto been produced. We may likewise refer, as of some importance, to the short notice of Lieutenant Clayton, who says that the Sea-Lion is one of four amphibious animals which occurs at the Falkland Islands, and "that both the lion and lioness are bull-faced, with long shaggy hair."* We have only to look to Forster's figure to be convinced that it has no title to this character.

It is, therefore, with considerable confidence that we present the above drawing as a correct representation of the animal described by Pernetty, which was brought from the antarctic regions some years ago, and transmitted to the Royal Museum of Edinburgh by the Honourable the Admiralty Board. We believe this is the first time (with the exception of Pernetty's labours just alluded to) that this Sea-Lion has been depicted or described, and therefore we shall here supply the external characters as far as they can be obtained from our specimen, which is truly a valuable one, and in excellent condition.

The head is very large and round, and truncated anteriorly; the neck also is very large, and not well defined; the body too is robust, tapering to-

* Phil. Trans. vol. lxvi. p. 102.

wards the tail; the neck is covered all round with a distinct mane of coarse bristly hairs, between three and four inches long, of a brownish-black and greyish-white colour. The coat generally is of the same colour; not, however, so coarse, and very short and loose, lying close to the skin; on the under portion of the body it is of a deep brown colour. The face very much resembles that of the common Lion, the snout being even shorter; the nostrils are very large; the muzzle is short and full, covered with short, soft, brownish-black hair; the ears are quite distinct, though not long, and covered with hair. The fore-paws are nearly as far back as the middle of the body; they are falciform, and very strong; they have no appearance of nails, but have a long projecting membrane beyond the phalanges; the posterior extremities are long and broad, with four claws attached; the outer toe has none; the three next toes have the longest, the remaining nail is almost concealed; they are conical; beyond the claws are five strong projecting membranes. The skin of the outer half of the inferior part of the fore-paw, and nearly the whole of the inferior part of the hind-foot, is quite naked, and is deeply striped. The teeth are $\frac{3.1.5?}{2.1.5?}$ The incisors are conical, though, being much worn, we cannot speak decidedly; the two external are large, and resemble canines; the proper canines are large, more than an inch and a half long; the molars appear conical and truncated.

We add some of the principal measurements of our specimen.

	Feet.	In.	
Length, along the back, from tip of snout to tip of tail	7	10	0
—— of the tail	0	3	3
—— from tip of snout to anterior edge of fore-paw	3	4	1
—— from posterior edge of base of paw to root of tail	3	8	0
—— from ear to ear over the forehead	1	2	4
—— of fore-paws, from base to extremity	1	9	0
—— of projecting membranes	0	8	0
—— of hind-foot, from base to extremity	1	8	0
—— of projecting membrane, (much shrunk,)	0	6	0
—— of concha of the ear	0	0	8
Circumference of the neck, smallest part	4	5	6
—— body before the fore-paws	6	0	0
—— at the root of the tail	2	6	6
Distance of ear from angle of the mouth	0	7	0
—— from tip of nose to the eye	0	3	6
—— of external angle of the eye to the ear	0	3	10
—— of one external angle of the eye to the other	0	6	0

The following is the account of Pernetty, as taken from the animals he met with in the Falkland Islands:—"The name of the Sea-Lion applies best to that species, the head, neck, and shoulders, of which are covered with hair as long, at least, as that of the she-goat. This circumstance gives the animal a resemblance to the Lion of the forest. These Sea-Lions are about twenty-five feet long, and nineteen or twenty in circumference, where they are largest. The teeth of the maned Lions are much larger and more solid than those of other Seals. I have now in my possession the tooth of a true Sea-Lion, the diameter of which is at least three inches, and its length (including the root) seven, and it is not one of the

largest. We have counted twenty-two such as this in the mouth of one of these lions, and five or six more had fallen out. They did not project from the bone much above an inch and a half, and were solid throughout their length. Their solidity is almost equal to that of flint, and they are of a dazzling whiteness. Many of our sailors took them for white flints, when they found them on the shore, and it was with difficulty I could persuade them they were mistaken.

"These Sea-Lions are not more savage, nor more objects of apprehension, than the other species. They are equally heavy and clumsy in their gait, and more frequently endeavour to fly, than to run at those who attack them. They live upon fish, sea-birds, which they catch by surprising them, and herbs. They bring forth their young among the rushes, which grow on the sea-shore, to which they retire for the night, and continue to suckle them till they are strong enough to go out to sea. At sunset they are seen to congregate together, and to land in troops on the shore, and then the cubs call for their dams by cries so like those of lambs, and calves, and kids, that any one might be easily deceived, if he were not aware of their true nature.

"It was stated that their flesh was very good, but . never tasted it; but I can affirm that their oil is most excellent: it is obtained both by the assistance of heat, and without it, coming away spontaneously when exposed to the sun and air, when it is excellent for culinary purposes."

hall close these accounts of the Sea-Lions by extract from Captain Weddell. "Near the of the island of Santa Cruz, on the east : Patagonia, is an island which is called Sea-land, from the number of these animals re-ıpon it. This amphibious creature is most y denominated, from its similarity to the ɔed of that name. Its face is not unlike that .ion, but, in particular, a long mane, and a d fierce front, which it presents when standing ɔre flippers, bear a near resemblance to that A full grown Sea-Lion measures eleven feet e tip of the nose to the extremity of the tail, ht feet in circumference; the difference from ine Seal being only in the particulars I have ıed. They may, indeed, be considered as ng to a class of monsters of the Seal kind. ıeet their assailants with great ferocity, but .pture is easily accomplished."

[illegible]

[illegible] genus of F. Cuvier [illegible] the type of which we now [illegible] retracted, the five [illegible] deeply [illegible] and the lower are notched [illegible] and before; [illegible] only one root, not so [illegible], which last consists of [illegible] tubercle, with [illegible] smaller one at its base, [illegible] before.



THE PUSILLA, OR CAPE OTARY.

Otaria Pusilla.—Desmarest.

PLATE XX.

Otaria Pusilla, Desm. Cuv. Ph. Pusilla, Lin. Petit Phoque, Buff. Loup Marin of Pagès. Cape Otary.

The above cranium, typical of the genus, was taken from the Cape Otary, and therefore we give it the precedence.

The mutations to which this little Seal has been subjected have been unusually great and numerous;





GENUS ARCTOCEPHALUS.

We have now reached the only remaining genus of F. Cuvier the *Arctocephalus*, the cranium of the type of which we now present. The head is arched, and the muzzle retracted, the four central incisors are deeply bifurcated, and the lower are notched both behind and before; the molars have only one root, not so large as the crown, which last consists of a centre tubercle, with a much smaller one at its base, both behind and before.



THE PUSILLA, OR CAPE OTARY.

Otaria Pusilla.—Desmarest.

PLATE XX.

Otaria Pusilla, Desm. Cuv. Ph. Pusilla, Lin. Petit Phoque, Buff. Loup Marin of Pagis. Cape Otary.

The above cranium, typical of the genus, was taken from the Cape Otary, and therefore we give it the precedence.

The mutations to which this little Seal has been subjected have been unusually great and numerous;





t was first the Seal of the Mediterranean and the ancients, then a native of the East Indies, and now, we trust finally, has its habitat assigned at the Cape of Good Hope.

This species, according to Pagis, attains the length of four feet, and two and a half in circumference, although the common size is two and a half or three feet long, with a foot and a half in circumference. The head is round, and somewhat depressed, with a very short snout, and its physiognomy is agreeable. It has six incisors, the four middle ones of the upper jaw are large and forked, each having two lobes, the one before and the other behind; the outer incisor is sharp and pointed.* The whiskers are long, simple, and black; the ears are straight, and one inch and a half long; the neck is full, as is the chest; the inner finger of the fore flipper is the longest; the nails are almost imperceptible, hid under the hair, and so small as scarcely to merit the appellation; the hind flippers have three very distinct nails belonging to the middle toes, whilst those of the external ones are scarcely visible; they have also a projecting and divided membrane, and the under portion of the feet is naked and hard. Its coat is soft and glossy, of a brownish colour, tending to iron-grey; the head is deeper coloured; the under part, more especially the breast, is much lighter; the feet are black.

In their disposition these animals are very timid

* Daubenton, Buff. xiii. 414.

and sociable. When disturbed they only think of saving themselves in the sea, and never bite except one put himself in their way: often, however, they will pass between one's legs in their hurry, without offering the slightest injury. They easily familiarize themselves with man. "I preserved," says Mr Pagis,* "two of them for eight days. The first day I put sea-water into their tub, one foot and a half deep, but as they seemed anxious to avoid it, I tried fresh water, which was not more agreeable; I therefore left them dry afterwards. On coming out of the water they shook their coats like dogs; they sneezed, too, like them, and scratched and cleaned themselves with their snout, and lay down close together as they do. When the sun shone I left them on the ship's deck, and they never seemed to wish to retreat except when they saw the sea. Not only did they scratch themselves and each other, but they liked the men to do it, and followed them with great familiarity, and smelt them as do dogs. They had a great affection for each other, and when separated immediately endeavoured to meet: if we took up the one, the other certainly followed. When fish, or bread soaked in water, was offered them, they smelt it, but would not take it. They, therefore, did not thrive in their confinement, and were thrown into the sea, where they seemed to be more at home."

We now proceed to the Sea Bears.

* Apud Buffon, loc. cit.

[illegible]



OTARIA URSINA.
The Sea Bear of Steller.
North America.

THE URSINE SEAL, OR SEA-BEAR OF STELLER.

Otaria Ursina.—Desmarest.

PLATE XXI.

Otaria Ursina, Cuv. Des. 381. Arctocephalus Ursinus, F. Cuv. Ph. Ursina, Gm. Otaria Stelleri, Less.*

This Ursine Seal of Steller has been considered as identical with the Ursine Seal of the Southern Hemisphere, by nearly all Naturalists, and among others by Buffon, who collected all the materials he could procure of both, and applied them to one. All analogy would lead us to question the propriety of this, and we have little doubt that careful examination will lead to an opposite conclusion. The following opinion of Peron's is striking—"We are convinced that under the name of Sea-Bear there really exist more than twenty Seals, which differ

* In Gray's Spi. Zool. there is a cranium of what he calls *Arctocephalus Lobatus*, and which he says differs considerably from its congeners, the Phoca Ursina, in Zool. Journ. iv. 496.

from each other in all their minute characteristic points.* We shall first introduce the very elaborate description of Steller, supplying an abridgment of his enlarged account in nearly a literal translation.

This nearly amphibious animal, of the size of a very large Bear, resembles no animal so much as that we have just named; there is an exception, in that the feet and hinder parts of the body suddenly diminish in their dimensions, become weak and slender, and terminate in a conical shape; so much so, that the circumference of the body, which is five feet at the shoulder, is reduced to twenty inches near the tail. The extreme length is seven and a half feet. The head especially resembles that of the Common Bear, but on account of the thickness of the skin and fat, it appears larger and rounder. The mouth is very small and prominent, as in the Bear; the forehead rises suddenly towards the eyes; the nostrils are composed of black skin, and are not covered with hair; they are oval and open; the lips are externally tumid, and internally of a rosy hue; the whiskers are long, but not numerous; the teeth are like those of the Sea-Lion, (p. 236,) with this important difference, that they are only a quarter of the size; the apex of the tongue is bifurcated; the eyes are very prominent and full, nearly as large as those of the ox, the iris is black, the pupil bright green; there are eye-lids and eye-brows, with a

* Ann. des Mus. d'Hist. Nat. t. xv. 293.

membrana nictitans, by which it can protect the eye; the external ears are one inch and eight lines long, conical and erect, covered with short hair; they open by an oblong slit, which is shut in the water.

This creature has four feet on which it can walk and stand somewhat like land animals. The limbs are formed of precisely the same bones, but so buried in the skin, and webbed, that the fingers of the fore-paw coalesce into one mass, as do those of the hind foot, and thus the whole become fins in swimming. The fore-legs are two feet long and eight inches broad; they are not hid as in the Seal, but are seen entire as in quadrupeds; they are covered with hair, except the under part of the paw; on the upper part are seen very slender and minute rudimentary nails, which nature seems to have added, that they might not be wanting, rather than they might be of use; the posterior edge is festooned in five very small curves, corresponding to the five toes. By help of the web, the animal can easily raise the upper part of its body above the water, and so appear to stand erect in it. When on shore, with the hind feet folded under, it plants its paws in front, and sits as dogs often do, so that the toes then perform the office of heels.

The hind flippers are twenty-two inches long and six broad, and are of little use in walking; they adhere so closely to the body that each, indeed, can be

moved separately, but cannot assume the position as in standing, so that when the animal attempts to move forward on land, it draws its hind feet and the whole of its body behind it like an inert mass. The parts corresponding to the thigh and leg are concealed in the body, but those forming the ankle and foot are free and exposed, and covered with hair; where the bones end, the flipper is divided, and its extremity appears like five straps, the extremities of which are round. The nails on the great and little toes are so small that they can be of no use; those on the other toes are much larger, and of the same length and breadth.

The skin is very thick, and the hair is like that of the Seal, but four times longer, standing erect, and very thick. Close to the skin there is a very soft wool, which is of a brownish-red colour. The longer hair in the old males is two inches long round the neck, erect and stiff, and thus, when the animal becomes dry, it appears considerably larger than when in the water: their hairs are black, and in the aged become tipped with white; the females are ash-coloured, and many are partly ash-coloured and partly brown. The skins of the young are much prized for clothing; and Steller says, "When I was in Behring's Island, I prepared a garment for myself of a young one with my own hands, and will ever retain a grateful recollection of it. The brain was much larger, comparatively speaking, than that of the Otter, and the primæ viæ was fifteen times

;th of the whole body, and the stomach was ly found empty."

e animals are found in amazing numbers in ıds off the North-West point of America, rowd the shore, that they oblige the traveller it, and scale the neighbouring rocks. They and much on the Asiatic coast. They are as y migratory as birds of passage. They first off Kamskatka and the Kuriles in early and are then very fat, and the females all ıt. They continue on shore for two months, which the young are produced. Except ıployment in suckling their young, they pass ne in total inactivity, the males sink into the ofound indolence and into deep sleep; nor y ever roused except by some great provoca- They live in families; every male being sur- l by a seraglio of from eight to fifty females, he guards with the jealousy of an Eastern h. Each family keeps separate from the notwithstanding they lie in thousands along ore, every family, including the young, ing to about 100 or 120: even at sea the ness of the families may be perceived.

males show great affection for their young, sometimes tyrannical towards their females. ıre fierce in protecting their offspring, and any one attempt to take their cub, they stand defensive, and the mother carries it off in ıth. Should she happen to drop it, the male

instantly quits the enemy, falls on her, and beats her against the stones, till he leaves her for dead. As soon as she recovers she crawls to his feet in the most suppliant manner, and bedews them with her tears, whilst he keeps stalking about in the most insolent manner; but if the cub is carried off, he melts likewise, sheds tears, and shows every mark of deep sorrow.

Those animals which are destitute of females, and from age are deserted by them, withdraw from the society, and grow excessively splenetic, peevish, and quarrelsome; they are also very furious; and so attached to their selected stations, as to prefer death to the loss of them. They are enormously fat, and emit a most nauseous and rank swell. If one perceives another approach its seat, he is instantly roused from his indolence, snaps at the encroacher, and gives battle. During the fight they insensibly encroach on the stations of others; this creates new offence, so that at length the civil discord spreads along the whole shore, attended with hideous growls, their note of war. Sometimes they will attack any one that passes near them; when they see a person approaching, some of them immediately throw themselves upon him, and the others prepare for contest; they furiously bite the stones that are thrown at them, and run upon him who throws them, and even if you knock out their teeth and their eyes, they will not flee. In fact, none of them dare abandon his post, because the others would in that case

attack him; and if he commences to fly, the others suddenly surround him and severely punish him. "I doubt not," adds Steller, "that many of us would have been killed by them, could they have used their feet on land as well as in the water. It is dangerous to engage in contest with them in the open plain, and next to impossible to escape from them. Their awkwardness and difficulty in ascending eminences constitutes the principal safety of the assailants. Sometimes I have been beset by them for six hours together; and have been obliged at last to ascend a precipice, to get rid of the infuriated creatures, at the imminent peril of my life."

They are very tenacious of life, and will live a fortnight after receiving wounds which would have immediately destroyed any other animal.

Besides their notes of war they have several others. When they are amusing themselves on shore, they low like a cow, and after victory chirp like a cricket; and upon receiving a wound, complain like a whelp.

This Ursine Seal is an object of terror to common Seals and Sea-Otters, whilst it stands in awe of the Sea-Lions, and leaves to them their favourite haunts on shore. The older animals are in no fear of mankind, unless suddenly surprised, when they hurry off by thousands into the sea, swim about, and stare at the novelty of their disturbers.

They swim with amazing swiftness, at the rate of eight miles an hour, and often on their back; they

dive well, and continue long under water. If struck with a harpoon in that element, they drag the boat, carrying it along with great impetuosity almost as if flying, and will sometimes sink it. Even out of the water, the females especially can run so rapidly, that it requires a swift person to get up to them.







THE URSINE SEAL, OR SEA-BEAR OF FORSTER.

PLATE XXII.

Otaria Ursina, Cuv. Des. 381, O. Forsterii, Less. Ours Marine, Buff.

We are satisfied that the well-instructed Naturalist will be the last to object to our thus separating the Ursine Seal of the southern from that of the northern hemisphere. Not that we shall attempt to establish the distinction on scientific principles. Even this could easily be done, in appearance, by copying from systematic works, but we prefer withholding statements which are probably erroneous, and will at once adduce from the original authorities such real information as our space admits.

In "Dampier's Voyage," we find it stated that "these animals exist in thousands in the island of Juan Fernandez. They are the size of an ordinary calf, and their head is shaped like a dog's; their hair is of different colours, as black, brownish-grey, and spotted, appearing very smooth and agreeable when they first come out of the water. They have so fine and short a fur, that I have seen nothing like it. There

are always round the island thousands in the bays, and going to and returning from the sea. When a mile or two from shore, you observe that the island, and all round it, is covered with them, some playing on the wave, and others basking on shore. When they come from sea they bleat for their young like sheep, and pass by an infinity of others till they come to their own cub. The young resemble small dogs, and greatly prefer the land, but when chased thence, they make for the sea as fast as the old ones, and swim very fast and lightly, though on land they are sluggish, and will not leave their own lair till they are well beaten."

The illustrious Cook's notice of them is very short. He tells us that "the Sea-Bears are not so large by far as the Sea-Lions, but they are rather larger than the Common Seal; they have none of the long hair which distinguishes the Lion, theirs being all of equal length, and finer than that of the Lion, somewhat like an Otter's, and the general colour is iron-grey."

The naturalist and companion of the great circumnavigator, in his second voyage, supplies a much more particular account. The locality in which he observed it was that noticed by Cook, viz. New-Year's Island in Staten Land. "We soon," says Forster, "perceived that another kind of Seal occupied this part of the island. These were no other than the Sea-Bear, which we had already seen at Dusky Bay, but they were here infinitely more numerous, and grown to a much larger size, equal to

hat assigned them by Steller. They are, however, far inferior to the Sea-Lions, the males being never above eight or nine feet long, and thick in proportion. Their hair is dark brown, sprinkled with grey, and much longer on the whole body than that of the Sea-Lion, but it does not form a mane. The general outline of the body, and the shape of the fins, are exactly the same. They were more fierce towards us, and their females commonly died in defence of their young. We observed that these Sea-Bears and the Lions, though sometimes encamped on the same beach, always kept wide asunder, and had no communication with each other. A strong stench is common to them, and to all other Seals, a circumstance well known to the ancients, as well as their inactivity and drowsiness, and hence Homer—

> Web-footed Seals forsake the stormy swell,
> And sleep in herds, exhaling nauseous smell.

"Dr Sparman and myself were near being attacked by one of the oldest Sea-Bears on a cliff where several hundreds were assembled, and where all seemed to wait the issue of the fight. The doctor had discharged his musket at a bird, and was going to pick it up, when this old Bear growled and snarled, and seemed ready to oppose him. As soon as I was near enough I shot the surly creature dead; and at that instant the whole herd, seeing their champion fallen, hurried to the sea; and many of them hobbled along with such precipitation, as to leap down between forty and fifty perpendicular feet

upon the pointed rocks on shore, without receiving any hurt, which may be attributed to their fat easily giving way, and their hide being remarkably tough."* Afterwards, when speaking of them at New Georgia, he observes, "They were all of the kind called Sea-Bears, and not a single Lion with a mane was to be seen among them. They were more fierce than any we had seen at New-Year's Isles, and did not care to run out of our way. The young cubs barked at us, and ran at our heels when we passed, trying to bite our legs."†

The following notice of what Wood Rogers designated Sea-Bears at the Gallapagos Islands bears on their dispositions:—"A very large one made at me three several times, and if I had not happened to have had a pike-staff headed with iron, he might have killed me. I was on the level sand when he came open-mouthed at me from the water, as fierce and quick as an angry dog let loose. All the three times he made at me I struck the pike into his breast, which at last forced him to retire into the water, snarling with an ugly noise, and showing his long teeth."‡

These extracts will probably suffice to exhibit the general appearance and habits of this animal. It manifestly appears to be considerably smaller than the Sea-Lion, and at the same time is not so timid, but much more fierce. It would appear to be rather

* Loc. cit. vol. ii. 516-22. † Ib. 529
‡ In Kerr's Voyages, vol. x. 374.

widely diffused, for supposing that all these accounts refer to the same species, we have seen it noticed in Dusky Bay, New Zealand, in New Georgia, Statten Land, Juan Fernandez, and the Gallapagos.

It will have been observed that several of these authorities, particularly Dampier and Cook, speak of the fineness of the fur of this Seal. It is probably these statements which have led the able author of the article *Phoque*, in the Dict. Classique d'Hist. Naturelle, to state that this Seal is the Fur-Seal of commerce. His words are—" L'Otarii de Forster est le Phoque à fourrures des pêcheurs êuropéens." But this we suspect is a mistake. No one will doubt that Captain Weddell was familiar with the Fur-Seal. He was also familiar with the Ursine-Seal, both as encountered in its haunts, and as described by Naturalists;* and yet, when speaking of the Ursine-Seal, (so denominated by him,) he never once hints that its fur has any peculiar value, but the contrary. This important subject, however, will again come under our consideration.

* Loc. cit. 199.

SEA-BEAR.

FROM SPECIMEN IN THE BRITISH MUSEUM.

PLATE XXIII.

THOSE who remember the remark of the eminent Peron, that there are at least twenty Seals which go under the name of Sea-Bear, will not be astonished that we willingly adorn our volume by a delineation of a specimen now in the British Museum. From the engraving of the distinguished Naturalist of the Rurick we have taken our representation of the Sea-Bear of the Northern Regions; from the plates of Buffon we have derived a representative of those of the Southern Hemisphere, supplied by Forster, the companion of Captain Cook; and though there are strong reasons for believing that these two animals are really different, yet it must be confessed a marked similarity exists in the delineations; whilst the preparation in the British Museum differs considerably from both. Our attention was directed to this specimen by the kind civilities of Mr J E. Gray, the well known officer of the National





URSINA
Museum.

Establishment; and Mr Fussel's spirited delineation speaks for itself.

Of the habitat and habits of this Otary we believe nothing is known; and severe criticism might demand, What is the use of such isolated and imperfect hints? The acknowledged fact, however, that even the most advanced Naturalist in this department is but groping in the dark, supplies too satisfactory an answer to all such interrogatories.

LESSON'S OTARY.

O. Molossina.—Lesson.

PLATE XXIV.

O. Molossina, Les. (Zool. de la Coq. 140.) Platyrhynchus Molossinus, Les.

Lesson and Garnot are our first authorities for this species, which was captured in the Southern Ocean. Lesson supposes it may be the same with one of the small species alluded to by Pernetty, and with that one named *O. Guerin*, and shortly described by Quoy and Gaimard, as having been seen in the Falkland Islands.

Lesson describes its forms as marked and regular; the head is small and round, with a face like that of the mastiff; the nose is not prominent, and has a groove on it; the upper lip overhangs the lower, and both are edged with short hair; the whiskers are long, fawn-coloured, and cover the face; the iris is green, the eye-lashes red; the ears very small, pointed, and curled upon themselves; the fore flippers are like fins, terminated by a thick



OTARIA MOLOSSINA.
Zool. de la Coquille

membrane, festooned on its edge, black and quite smooth; the fingers may be distinguished, and four rudimentary nails appear. The hind flippers closely approximate, are flat, and terminated by phalanges of equal length. The three middle are supplied with strong black nails an inch long; those on the external toes are quite small; the web is large, and forms five projecting portions, which are supplied with tendons proceeding from the last phalynx; they have no hair upon them, and are quite black. The external surface of the flippers, like the other parts of the body, are covered with short close hair, whilst the arm-pits and groins, and lower side of the feet, are quite naked. The length of the hair does not exceed a quarter of an inch, and the colour is a brownish-red, satin like, when the animal is alive. This Otary has thirty-six teeth, the upper incisors, flattened transversely, are separated into two lobes by a deep groove.

The animal so described was killed in the Falkland Isles. In November but few were seen, but towards the end of December they become very numerous. Lesson also noticed it on the coast of Chili in considerable numbers.

THE ASH-COLOURED AND WHITE-NECKED OTARIES.

In addition to the above species, thus recently aluded to by Lesson, two others must still be men-

tioned which are similarly circumstanced. Both were shortly noticed by Peron in his "Voyage;" but no detailed account, we believe, has hitherto been published. The one is this *Ash-coloured* Otary (O. Cinerea) referred to in the second volume of his Voyages, page 77, and by Desmarest in his Mammologie, No. 384. Lesson, in the Dict. Classique, states, that we may probably refer to this Otary a beautiful specimen which was sent to the Paris Museum by Quoy and Gaimard, and which was procured on the South-West coast of New Holland. We have taken some trouble, which, however, has proved fruitless, to obtain a drawing of this animal. The other is the White-necked Otary, (O. Albicollis,) shortly alluded to by Peron in the same volume of his Work, and by Desmarest, No. 385, and by Lesson. This one, so far as we know, has not been depicted. But necessitated, by want of space, to take no further notice of these ascertained, though scarcely described species, we must bring our list to a close by supplying a very succinct account of one which yields in value to none, and whose history, we trust, we can somewhat elucidate. We allude to



IA FALKLANDICA

THE COMMON FUR-SEAL OF COMMERCE.

PLATE XXV.

O. Falklandica, Desm. No. 387. Less. Dict. Class. Ph. Falklandica, Pen. p. 275, Shaw. Fur-Seal of Commerce.

SUCH of our readers as may be interested in this truly valuable Seal, in a commercial and economic point of view, we beg will turn to the observations which will be found in the introductory portion of this volume; * and such as desiderate more scientific details, we take the liberty of referring to a paper entitled "Observations on the Fur-Seal," which will be found in the Second Volume of the Annals of Natural History. In this paper, an attempt is made to prove that the *Falklandica*, introduced to the notice of Naturalists some sixty years ago by the illustrious Pennant, in his description of a specimen which had recently been presented to the Museum of the Royal Society, and also that the Long-Necked Seal, (the *Lon-*

* See p. 92.

[illegible] enough, we [illegible]
[illegible] there was al[illegible]
[illegible] evidence to prove the truth of this [illegible]
[illegible] Numismatists, therefore, [illegible]
[illegible] it is a cur[illegible]
[illegible] important fact was [illegible]
[illegible] themselves [illegible]
[illegible] the animals [illegible]
[illegible] of the [illegible]
[illegible] respecting both of t[illegible]
[illegible] One f[illegible]
[illegible] declares [illegible]
[illegible] that they could not
[illegible] distinct species.*

[illegible] in its literary and antiquar[illegible] character, this question has a much deeper inte[illegible] [illegible] point of view, [illegible] we have it in [illegible] present [illegible] the Repository of Science [illegible] so far as we know, ever offe[illegible]

the valuable work of Mr Weddell,* who, along several other good offices performed for this rtment of science, conveyed to this country, leposited in the hands of the eminent Keeper he Museum of the University of Edinburgh, specimens of the stuffed skins of this animal. y are now in the Museum in excellent order, we have used them to supply our Plate. In state they are, of course, insufficient satisfacy to establish all the scientific characters, but so s they serve, we will now present a faithful and iled description. The specimens are very ly alike in every respect, and appear to have carefully and accurately prepared.

idging from these specimens, this Seal, on the le, is long and slender,† having much the shape double cone, largest at the middle, and tapering le extremities. The head is broad, and rather the external ear is black, narrow, pointed, and ecting backwards. The fore-paws are precisely le middle of the body, their shape is pyramidal, in addition to the paw properly so called, there long projecting membrane running from the tip g the posterior margin to the base: they have estige of nails. The hind flippers are rhomal in their shape, and consist of the usual fleshy ion, and a membranous one, which at its termion is divided into five straps; there are nails on

Voyage towards the South Pole. London, 1825.
In noting the characters, we have enjoyed the valuable asice of our friend Mr William Jameson.

all the toes but the great one, those of the three middle being much the largest, and quite straight; there is a curious *slashing* at the junction of the common skin and the membrane, the skin covered with hair descending to the nail, whilst the membrane runs up between the toes more than an inch. The coat or robe is composed of *hair* and *fur;* the former is very soft, smooth, and compact, of a brownish-black colour towards the root, and a greyish-white towards the tip; it extends considerably beyond the fur, and gives the general colouring to the hide; the fur itself is of a uniform brownish-white colour above, and of a somewhat deep-brown beneath, and is quite wanting upon the extremities. The colour of the body is of a uniform lightish-grey above, passing gradually underneath into a reddish-white colour, which is deepest in the abdominal region. The upper part of the extremities is covered above with a very short brownish-black hair, which, near the body, passes into the colour of the back. The under portion of both extremities, to the extent of two-thirds of the anterior, and nearly the whole of the posterior, are naked, being quite destitute of both hair and fur. The whiskers are brownish-black, five rows being present; the hairs are simple and tapering: In one of the specimens there is a dark marking under the eyes. We shall now subjoin the principal measurements of the Edinburgh specimens, which were probably young, or females.

	Feet.	Inches.
Length from the snout to tip of the tail,............	3	3
——— of the tail, ...	0	1
——— ——— ear, ...	0	1
——— from snout to antr. edge of base of paw,...	1	5¼
——— posterior edge of paw to root of tail,...	1	5¾
——— of fore-paw from base to tip, ...	0	11
——— its membranous portion,......................	0	4
——— posterior extremity from base to tip,...	0	7
——— its membranous portion, ...	0	2
Greatest breadth of fore-paw at base,................	4	4
——— ——— ——— its point,..........	0	1½
Breadth across the back from one paw to another,	1	0
Distance from tip of snout to the ear,...............	0	5¼

The angle of the mouth in the perpendicular of the eye.

To this description we shall now add that account of its habits, &c. which has been supplied, with his usual point and ability, by Captain Weddell. "Nothing," he remarks, "regarding the Fur-Seal is more astonishing than the disproportion in the size of the male and female. A large grown male, from the tip of the nose to the extremity of the tail, is six feet nine inches, while the female is not more than three and a half feet. This class of the males, however, is not the most numerous, but, being physically the most powerful, they keep in their possession all the females, to the exclusion of the younger branches; hence, at the time of parturition, the males attending the females may be computed as one to twenty, which shows this to be, perhaps, the most polygamous of large animals.

"They are in their nature completely gregarious; but they flock together, and assemble on the coast at different periods, and in distinct classes. The males of the largest size go on shore about the middle

of November to wait the arrival of the females, who of necessity must soon follow, for the purpose of bringing forth their young. These, in the early part of December, begin to land; and they are no sooner out of the water, than they are taken possession of by the males, who have many serious battles with each other in procuring their respective seraglios; and by a peculiar instinct they carefully protect the females under their charge, during the whole period of gestation. By the end of December all the female Seals have accomplished the purpose of their landing. The time of gestation may be considered nearly twelve months; and they seldom have more than one at a time, which they suckle and rear apparently with great affection. By the middle of February the young are able to take the water, and after being taught to swim by the mother, they abandon them on the shore, where they remain till their coats of fur and hair are completed. During the latter end of February, what are called the Dog-Seals go on shore; these are the young Seals of the two preceding years, and such males as, from their want of age and strength, are not allowed to attend the pregnant females. These young Seals come on shore for the purpose of renewing their annual coats, which being done, by the end of April they take the water, and scarcely any are seen on shore again till the end of June, when some young males come up, and go off alternately. They continue to do this for six or seven weeks, and the shores are then again abandoned till

the end of August, when a herd of small young Seals, of both sexes, come on shore for about five or six weeks, and then retire to the water. The large male Seals take up their places on shore, as has been before described, which completes the intercourse all classes have with the shore during the whole year. The young are at first black; in a few weeks they become grey; and soon after obtain their coat of hair and fur.

"When these South Shetland Seals were first visited, they had no apprehension of danger from meeting men; in fact, they would lie still while their neighbours were killed and skinned; but, latterly, they had acquired habits for counteracting danger, by placing themselves on rocks, from which they could, in a moment, precipitate themselves into the water. The agility of this creature is almost greater than, from its appearance, an observer would anticipate. I have seen them, indeed, often escape from men running fast in pursuit to kill them. The absurd story, that Seals in general defend themselves by throwing stones at their pursuers with their tails, may be explained in this way;—that when an animal is chased on a stony beach, their mode of propelling themselves is by drawing their hinder flippers forward, thereby shortening the body, and projecting themselves by the tail, which, when relieved from the effort by the fore flippers, throws up a quantity of stones to the distance of some yards. Their sense of smell and hearing is acute, and in instinct they are little inferior to the dog, that is, I judge their

sagacity in the water much exceeds that which they exhibit on shore; for though they are fitted to remain a certain time on land, their native element is the water."

The fur skin of this valuable animal is prepared for the market in a manner different from what is employed in the preparation of most others. The long hair, which conceals the fur, is first removed, and this is done by heating the skin, and then carding it with a large wooden knife prepared for the purpose. The fur then appears in all its perfection, and sells in China for about two or three dollars, and in England (where, indeed, they are now scarcely to be found) at about three times that price. Not many years ago they were used as linings and borders of cloaks and mantles, and for fur-caps, &c. &c.



DOUBTFUL SEALS AND OTARIES.

Ribbon-Seal. Phoca Fasciata, Shaw.

In addition to the Seals which are well ascertained, Naturalists have been in the habit of giving a list of those which have been indicated by some respectable authority, but so slightly as still to remain doubtful. We now follow this example, commencing with the *Ribbon-Seal* of Pennant. This is characterized by a very short fine, glossy, bristly hair, of a uniform colour, almost black, marked along the sides, and towards the head and tail, with a stripe of a pale yellow colour, exactly resembling a ribbon laid on by art. The very curious form is represented above, from a drawing communicated by the celebrated Pallas to Mr Pennant. Of the animal generally nothing is known, though it appeared to be large. It was transmitted from one of the remotest Kurile Islands.

The following list, which might be much extended, is taken chiefly from the recent French Naturalists.

Seals.	Otaries.
Phoca Coxii.	O. Porcina.
—— Lupina.	— Coronata.
—— Punctata.	— Delalandii.
	— Hauvilii.

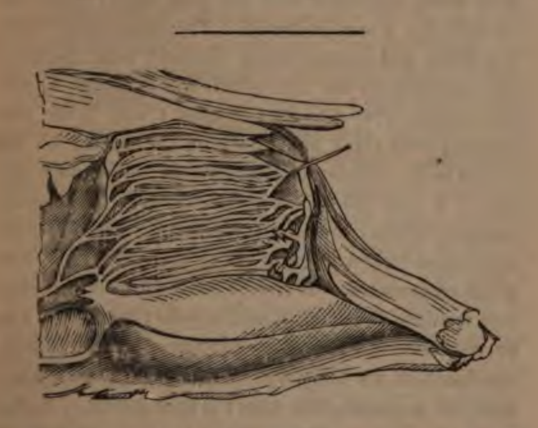
We close this list of doubtful Seals by alluding to the still more doubtful

ALLEGED SEA-APE.

It may increase the interest felt regarding the alleged existence of an animal under this name to introduce it in association with the peculiar views supported by Mr Swainson. "In the circle of the Feræ the natatorial type is represented by the Seals, and the corresponding type of the Quadrumana is at present most assuredly wanting. Whatever its precise construction may, or might have been, a resemblance to the Monkeys must be considered an essential character of any marine animal, which is to connect and complete the circular series of types in the Quadrumana. That some such creature has really been created we have not, says Mr S., a shadow of a doubt;* and in confirmation of this belief,

* Classificat. of Quad. Lard. Cyc. p. 97.

a *Simia Marina*, which he states was found in the Red Sea. Aldrovandi* copies this, and supplies a representation not more rude than apocryphal. A second, still more singular, he gives from Gesner.



It was only after the foregoing pages had gone to press that the following account of the distribution of the olfactory nerve attracted our notice; and it bears so directly on the somewhat obscure subject of the development of the nervous system, and more especially of the senses, of the Seal group, and so completely confirms the sentiments we ventured to express on the point, p. 69, that we deem it expedient, even here, to introduce the accompanying wood-cut and explanation, derived, we believe, from

* De Piscibus, p. 405.

the following quotation from Steller is adduced:—Mr Steller saw on the coast of America a very singular animal, which he calls a Sea-Ape. It was five feet long; the head was like a dog's; the ears were sharp and erect, and the eyes large; there was on both lips a sort of beard. The form of its body was thick and round, being thickest near the head and tapering to the tail, which was bifurcated, and the upper lobe was the longest; the body was covered with thick hair, grey on the back, and red on the belly. Steller could discover neither paw nor foot. It was full of frolic, and played a thousand monkey tricks; sometimes swimming on one side, sometimes on the other, of the ship, looking at it with great amazement. It would come so near the ship, that it might be touched with a pole; but if any one stirred, it would immediately retire. It often raised one-third of its body out of the water, and stood erect for a considerable time; it then suddenly darted under the ship, and appeared in the same attitude on the other side; and it would repeat this manœuvre thirty times together. It would frequently bring up a sea plant, not unlike a bottle gourd, which it would toss about and catch again in its mouth, playing numberless fantastic tricks with it."* This is not the place to trace the history of this alleged animal, which was more familiarly, we do not say more accurately, known in the days of Steller than at the present time. Ælian gives a description of

* Pennant's Quad. vol. ii. p. 301.

Comparative Anatomy and Physiology of Sir B.
wood:—"In carnivorous quadrupeds the struc-
of the bones in the nasal cavity is more intri-
than in the herbivorous, and is calculated to
d a far more extensive surface for the distribu-
of the nerve. In the Seal this conformation is
fully developed, and the bony plates are here
urbinated, but ramified as shown in the wood-
Eight or more principal branches arise from
main trunk, and each of these is afterwards
led and subdivided to an extreme degree of
teness, so as to form in all many hundred
s. The olfactory membrane, with all its nerves,
sely applied to every plate in this vast assem-
, as well as to the main trunk, and to the in-
l surface of the surrounding cavity, so that
tent cannot be less than 120 square inches in
nostril. An organ of such exquisite sensibi-
requires an extraordinary provision for securing
ainst injury, and Nature has supplied a me-
ism for the purpose, enabling the animal to
at pleasure the orifice of the nostril."*

* Roget, Bridgewater Treatise, vol. ii. p. 402.

GROUP II.

THE HERBIVOROUS CETACEA.

Of the finned nymphs, 'tis foolishly declared
They chase the warrior shark, the cumbrous whale,
And guard the mermaid in her briny vale.

Our declining space prevents us from saying more on the classification of this small and interesting group than what has already appeared in the Introduction. Though individuals belonging to it exist in large herds in many quarters of the globe, yet, till within a few years, not one had been seen in the civilized world, nor had any correct description or delineation been supplied. And yet the most intense interest was experienced regarding the family, not only by the man of science, but by the public at large. There can be no doubt that in many instances they formed the type of those ideal objects of ancient poetry, the tritons, half men and half fish, who had power, forsooth, to calm the stormy surge, and probably, too, of the syrens, those sea nymphs whose

melody charmed the entranced voyager to his destruction! The fancies of the northern nations were not less imaginative. "Beneath the depths of the ocean, an atmosphere exists adapted to the respiring organs of certain beings resembling, in form, the human race, who are possessed of surpassing beauty, of limited supernatural powers, and liable to the incidents of death. They dwell in a wide territory of the globe far below the region of fishes, over which the sea, like the cloudy canopy of our sky, loftily rolls, and there they possess habitations constructed of the pearly and coralline productions of the ocean. Having lungs not adapted to a watery medium, but to the nature of atmospheric air, it would be impossible for them to pass through the volume of waters that intervenes between the submarine and the supramarine world, if it were not for their extraordinary power of entering the skin of some animal capable of existing in the sea. One shape they put on is that of an animal human above the waist, yet terminating below in the tail of a fish; and thus possessing an amphibious nature, they are enabled not only to exist in the ocean, but to land on the shores, where they frequently lighten themselves of their sea dress, resume their proper shape, and with much curiosity examine the nature of this upper world."*

But we must endeavour to give our readers a nearer view of these wondrous creatures. Not

* Hibbert's *Shetland Islands*, 4to, p. 566.

many years ago the Wernerian Natural History Society (and to its praise we tell it) publicly offered a prize of considerable pecuniary value to the individual who would first present them with one of these far-famed animals; and by many this offer was regarded as a proof of weakness and credulity. Not long afterwards, however, the following statements appeared in one of the periodicals of the day, for the general truth of which, from personal knowledge of some of the parties, we can vouch. "A short while ago it was reported that a fishing boat, off the island of Yell, one of the Shetland group, had captured a mermaid by its getting entangled in the lines!! The statement is, that the animal was about three feet long, the upper part of the body resembling the human, with protuberant mammæ like a woman; the face, forehead, and neck, were short, and resembling those of a monkey; the arms, which were small, were kept folded across the breast; the fingers were distinct, not webbed; a few stiff long bristles were on the top of the head, extending down to the shoulders, and them it could erect and depress at pleasure, something like a crest. The inferior part of the body was like a fish. The skin was smooth, and of a grey colour. It offered no resistance, nor attempted to bite, but uttered a low plaintive sound. The crew, six in number, took it within their boat, but superstition getting the better of curiosity, they carefully disentangled it from the lines, and a hook which had accidentally fastened in its body, and returned it to its native

element. It instantly dived, descending in a perpendicular direction."

After writing the above, (we are informed,) the narrator had an interview with the skipper of the boat and one of the crew, from whom he learned the following additional particulars. They had the animal for three hours within the boat; the body was without scales or hair; was of a silvery grey colour above, and white below, like the human skin; no gills were observed; nor fins on the back or belly. The tail was like that of the dog-fish; the mammæ were about as large as those of a woman; the mouth and lips were very distinct, and resembled the human.

This communication was from Mr Edmondston, a well known and intelligent observer, to the distinguished Professor of Natural History in the Edinburgh University, and Mr E. adds a few reflections, which are so pertinent, that we shall avail ourselves of them. "That a very peculiar animal has been taken, no one can doubt. It was seen and handled by six men, on one occasion, and for some time, not one of whom dreams of a doubt of its being a Mermaid. If it were supposed that their fears magnified its supposed resemblance to the human form, it must at all events be admitted that there was some ground for exciting these fears. But no such fears were likely to be entertained; for the Mermaid is not an object of terror to the fisherman; it is rather a welcome guest, and danger is apprehended only from its experiencing bad treatment. The

usual resources of scepticism, that the Seals and other Sea-Animals, appearing under certain circumstances, operating upon an excited imagination, and so producing ocular illusion, cannot avail here. It is quite impossible that, under the circumstances, six Shetland fishermen could commit such a mistake."*

Having thus supplied a narrative of a personal interview with a Mermaid, we shall next do as much for the Merman. "About a mile from the coast of Denmark, near Landscrona, three sailors, observing something like a dead body floating in the water, rowed towards it. When they came within seven or eight fathoms, it still appeared as at first, for it had not stirred; but at that instant it sunk, and came up almost immediately in the same place. Upon this, out of fear, they lay still, and then let the boat float, that they might the better examine the monster, which, by the help of the current, came nearer and nearer to them. He turned his face and stared at them, which gave them a good opportunity of examining him narrowly; he stood in the same place for seven or eight minutes, and was seen above the water breast-high: At last they grew apprehensive of some danger, and began to retire; upon which the monster blew up his cheeks, and made a kind of roaring noise, and then dived from their view." In regard to his form, they declare in their affidavits, which were regularly taken

* Edinburgh Magazine, vol. xiii.

recorded, that "he appeared like an old man, g-limbed, with broad shoulders, but his arms could not see. His head was small in proporto his body, and had short curled black hair, h did not reach below his ears; his eyes lay in his head, and he had a meagre face, with a beard: about the body and downwards this man was quite pointed like a fish."*

s illustrating the habits, and still more as bearon the voice, a noted power of these strange tures, thus distinguished by the great dramatist not less fancy than fable—

> I heard a Mermaid on a dolphin's back—
> Uttering such dulcet and harmonious breath,
> That the rude sea grew civil at her song.—

shall transcribe the account of two incidents h were observed in the Southern Hemisphere. very singular circumstance happened," says tain Colnett, "off the coast of Chili, in lat. 24 S., h, as it spread some alarm among my people, awakened their superstitious apprehensions, I mention. About eight o'clock in the evening nimal rose alongside the ship, and uttered such eks and tones of lamentation, so much like e produced by the female human voice when exsing the deepest distress, as to occasion no ll degree of alarm among those who first heard These cries continued for upwards of three

* Pontopildon's Nat. Hist. of Norway, p. 154.

hours, and seemed to increase as the ship sailed from it. I never heard any noise whatever that approached so near those sounds which proceed from the organs of utterance in the human species." Captain C. subsequently mentions that one man was so panic-struck, that had he been much longer in landing he would certainly have died.* And finally, to bring these narratives to a close—"A boat's crew," says Captain Weddell, "were employed in Hall's Island, when one of the crew, left to take care of some produce, saw an animal whose voice was even musical. The sailor had lain down, and about ten o'clock he heard a noise resembling human cries; and as day-light in these latitudes never disappears at this season, he rose and looked round; but, on seeing no person, returned to bed; presently he heard the noise again; rose a second time, but still saw nothing. Conceiving, however, the possibility of a boat being upset, and that some of the crew might be clinging to some detached rocks, he walked along the beach a few steps, and heard the noise more distinctly, but in a musical strain. Upon searching round he saw an object lying on a rock a dozen yards from the shore, at which he was somewhat frightened. The face and shoulders appeared of human form, and of a reddish colour; over the shoulders hung long green hair; the tail resembled that of the Seal, but the extremities of the arms he could not see distinctly. The creature continued

* Voyage to tne South Atlantic. London, 1793.

to make a musical noise while he gazed about two minutes, and on perceiving him it disappeared in an instant. Immediately when the man saw his officer, he told this wild tale, and to add to the weight of his testimony, (being a Romanist,) he made a cross on the sand which he kissed, so making oath to the truth of his statement. When I saw him, he told the story in so clear and positive a manner, making oath to its truth, that I concluded he must really have seen the animal he described, or that it must have been the effects of a disturbed imagination."*

We adduce these few as examples of the many statements which from time to time have been made. At the moment, the fact is a matter of nine days' wonder; it is then speedily obscured in the mists of forgetfulness; those who would be thought more knowing than their neighbours treat the whole affair with scepticism and derision, and mankind generally are left in the uncertainty and ignorance in which they were before. We believe there was as much general intelligence concerning this class of animals two or three hundred years ago as there is at the present day; or, to put it in more appropriate words, that there is as much prevailing ignorance now as there has been at any former period. Among the preceding incidents, that derived from Shetland occurred in 1823, and since that time we are not aware that any additional facts

* Voyage towards the South Pole, p. 143.

have been supplied for general information. We have no doubt that though there was much truth in the narratives, there was also much error; and we must now, so far as we can, supply our readers with such information as will enable them to correct these errors, and to read aright all such histories.

It is here, however, only right to add, that these marvellous stories of Mermaids are not to be associated only with the herbivorous cete now to be introduced to notice. Large allowance must be made for the workings of an excited imagination, in situations of solitude and apprehension, on the unexpected appearance of an extraordinary and unknown object. In many instances, even the animals whose histories we have been reviewing, viz. the Walrus and the Seals, have unquestionably been the originals which supplied, to wide and credulous circles, the subject-matter of their astonishment and wonder. It will be in the recollection of the reader that we have previously quoted Mr Scoresby's words—"I have myself seen a Sea-Horse under such circumstances, that it required little stretch of imagination to mistake it for a human being, and the surgeon actually reported to me that he had seen a man with his head above the water." Many of these narratives have had their origin in the Northern nations, where the herbivorous cete are certainly rare; and this fact quite harmonizes with the more enlightened belief in these regions, that it is generally some species of Seal, very frequently the *Barbata* or Haaf-Seal, which, from its more

solitary habits, has given rise to these legends. And, once more, we have little doubt that the young, especially, of certain species of Whales, from their striking fashion of raising their heads perpendicularly above the wave, and so taking a deliberate survey of surrounding objects, may occasionally have led to the same result. Thus, then, in the ordinary cete, and in the Walrus and Seals, as well as in our herbivorous cete, are we to recognize the original types of nearly all these wondrous tales.

The small group, forming the herbivorous cete, is now divided into three genera, and about twice as many species: it consists of the *Manatee* of the West Indies, the *Dugong* of Eastern Seas, and the *Stellerus*, an inhabitant of the polar regions. As to their general character, we may note that their head is scarcely distinguished from the body by any neck; they have no blow-holes on the summit of the head, but nostrils on their snout; the shape of their body is pisciform; they have no dorsal fin; their tail is horizontal like that of the other cete, and they have not even the rudiments of the posterior extremity; their pectorals are quite swimming paws; their mammæ are pectoral; their skin is nearly destitute of hair, and their teeth are not those of carnivorous but of herbivorous animals.

We now proceed to the genera and species.

GENUS MANATUS, Cuv. Trichechus, Lin.

The Manatus derives its principal generic character from its swimming paws; these, different from what appears in its congeners, have four flat nails attached to the edge of the fin. The tail, too, is characteristic, being oval-shaped and long, extending to about one-fourth of the body.

THE MANATEE OF THE WEST INDIES.

PLATE XXVI.

Manatus Americanus, Cuv. Desm. Less.

We are happy that, from the attention of the Duke of Manchester in transmitting a specimen of this animal to the Royal Society, we can present our readers with a faithful likeness taken from the Philosophical Transactions for 1821. This individual was a young one, which had not attained above a quarter of its full dimensions.

It will be observed that the form of the body is elongated. When fully grown, the animal attains, and often surpasses, the length of twenty feet, and weighs not less than three or four tons; twelve or fifteen feet are, however, its more common dimensions. The head is conical, without any mark of depression at its junction with the body; the muzzle is large and fleshy, and at its upper part is semicircular, where two small semi-lunar nostrils open. The upper lip is full and cleft in the middle. Two tufts of stiff bristles, of considerable size, are situated



MANATUS
The Manatus of the West Indies.



sides; the lower lip is shorter, and more
it than the upper, and both are lined internally
short, hard, very thick hairs. The mouth is
rge; the eyes are small. The only appear-
of ears are two small fissures, which penetrate
kin. The swimming paws are much more free
heir motions than those of the ordinary cete;
fingers are felt through the skin, and they pos-
considerable power and motion. The thumb
no nail; the fingers have, though that of the
le finger is particularly small. The surface of
e body is of a greyish colour; the skin is coarse-
ained, and very thick and strong, like a bull's
de; a few scattered and slender hairs appear upon
, most numerous at the angle of the mouth, and
nder the paws. The mammæ, which are usually
but little developed, enlarge during the period of
lactation, and the milk is agreeable to the taste.
The number of the vertebræ and the ribs is vari-
ously stated by Sir E. Home and Baron Cuvier.
Both agree that the ribs are quite peculiar in their
form.

The manners and dispositions of this animal are
stated to be inoffensive, mild, and amiable. Buffon
observes, that they are both intelligent and sociable,
naturally not afraid of man, but free in approaching
him, and following him with confidence. But they
have especially a kindly feeling for their fellows. They
usually associate in troops, and crowd together with
the young in the centre, as if to protect them from
harm, and when any danger besets them, each is

willing to bear its share in mutual defence or attack. When one has been struck with a harpoon, it has been noticed that the others tear the weapon from the flesh; and usually if the cubs be taken, the mother is careless of her own preservation, while if the mother be taken, the young follow her to the shore, where they themselves are captured.

The Manatus is not found in deep waters. It frequents the shallow bays among the West Indian Islands, and the sheltered creeks in the South American continent, particularly Guiana and the Brazils. It was, in former times, especially at the mouths of those vast rivers, the Oronoco and the Amazons, that these cete delighted, and lived in innumerable shoals. They also ascended many hundreds of miles, frequented their tributaries, and peopled the fresh water lakes connected with them; and in these places were sometimes observed to be frolicsome, and to leap, as do the ordinary Whales, to great heights out of the water. The historian Binet remarked, that in his time there were certain places within ten or twelve leagues of Cayenne where they so abounded, that a large boatful could be procured in a day; and that they sold in the market for about threepence per pound. But the high estimation in which their flesh was generally held, and the avidity with which they were pursued, led ere long to a vast thinning of their numbers, till finally they have been almost exterminated in those countries which are thickly peopled.

The mode in which they were captured at St

Domingo, according to Oviedo, was as follows:—"They were approached in a small boat, and struck with a large harpoon, to which a long and strong cord was attached. As soon as struck they make great efforts to escape, carrying the harpoon and cord along with them; to the extremity of the latter a cork, or piece of light wood, is affixed, which serves as a buoy, and indicates the movements of the wounded individual. Their victim being thus seized, his assailants return to shore, bringing them along with the end of the rope, and when the animal becomes exhausted, they begin to draw it on shore and despatch it." This perfectly agrees with the account we read in "The familiar Description of the Mosquito Kingdom."—"They yield the sporter no small diversion; for after having a dart or harpoon struck into their side, with a long line and buoy fastened to it, they hold some time in play, and will not leave the shoals, by which means they receive many lances and arrows from the Indians before they will be taken; many times they upset the boat in struggling."*

From this same work we extract the author's testimony regarding their excellency as an article of food:—"Their best fish is the Manatee. Most travellers in these parts that I have seen call it the best fish, if not flesh, in the world. They are sometimes found straggling in the lagunes in this country, but are not suffered to increase, through the

* Collection of Voyages, &c. fol. vol. vi. 312.

greediness of the Indian, who spares no pains when he has the prospect of getting any. The most are very white and of a pleasant taste, and many ships' companies have often experienced the virtues of it in the recovery of their healths." Modern authors generally corroborate these statements. They uniformly affirm that the flesh is excellent, tasting more like beef than fish. Gumilla states that the flesh of those of the Oronoco, when roasted, has the flavour of pork and the taste of veal, and when salted makes excellent sea store.

The carcase of an animal belonging to this genus is said to have come ashore at Newhaven, in the Frith of Forth, in the autumn of 1785. It had, however, been long dead, and was so much destroyed, that Mr Stewart, who examined it, could not determine the species. Duhamel also mentions that a female Manatus, with its cub, was thrown ashore near Dieppe, where it was regarded an extraordinary occurrence.

M. SENEGALENSIS, Adanson, Cuv. Desm

The celebrated Naturalist Adanson was the first to notice this animal, which M. F. Cuvier, from an examination of its cranium, has separated from the former. It frequents the rivers and shores of Western Africa. and especially of Senegal. Adanson, we

believe, minutely studied its history, but did not publish the result of his labours. Mr Pennant, along with his short description, gives a plate of a young one which he found in the Leverian Museum, and which had been captured in the Senegal. This specimen was six and a half feet long, though they grow, he adds, to the length of fourteen and fifteen feet. They are also very fat, and the fat adheres to the skin in the form of blubber.*

Dr Harlan has published an account of what he considers another Manatus, under the name of *Latirostris*, and which appears to inhabit the great rivers of the Floridas.† Most Naturalists suppose that other living species still remain to be described; and Baron Cuvier has discovered several fossil bones of the genus.

We now proceed to the

* Hist. of Quadrupeds, vol. ii. p. 296.
† Philad. Jour. of Nat. Scien., vol. x..



GENUS DUGUNGUS, Camper, Lacépède, Lesson, Halicore, Illiger, Desm. Fr. Cuv. Mermaid, Sea-Cow.

This genus differs most conspicuously from the last, in that it has no vestige of nails, and in its tail not being rounded, but forked, like that of Whales.

THE DUGONG.

PLATE XXVII.

Dugungus Indicus, Less. Halicore Dugong, F. Cuv. Halicore Indicus, Desm. No. 751. The Dugong.

In the year 1820, Sir E. Home stated in the Royal Society, that no specimen had ever been seen of full size by any who was conversant with comparative anatomy. About this period, however, owing chiefly to the exertions of our illustrious countrymen, Sir T. Raffles, several specimens were procured, and some of these, with accurate accounts, were trans-



DUGUNGUS INDICUS
(Dugong of East Indies)

mitted both to this country and to France.* Our plate, which is of a young animal, we owe to his exertions, and we are happy to enrich our pages with some extracts from his clear and simple history. In its general form the Dugong resembles the common cete. The skin is smooth and thick, bluish above and white beneath, with a few remote and scattered hairs; the mammæ are situated on the chest under the fins. The head is small in proportion, and of a peculiar form. The upper lip is very large, thick, and obliquely truncated, forming a short, thick, and nearly vertical kind of snout, something like the trunk of the Elephant cut short across. The surface of the truncated portion is covered with soft papillæ, and furnished with a few bristles; the lips are covered with a horny substance, which assists in tearing the sea weeds for food. Two short tusks project forward from the extremity of the upper jaw, and are nearly covered by the upper lip, which is very moveable and tumid at the margin. The lower lip is much smaller, and resembles a round or oblong chin. To assist the animal in browsing upon the submarine vegetables which form its food, the anterior part of the jaw is bent downwards at an angle, in such a way as to bring the mouth into nearly a vertical position. There are no canine teeth. The molars are twelve in number, six in each jaw, placed far back on the horizontal

* Such of our readers as have the opportunity, may see two of these animals, both young, in the Museum of the Edinburgh University.

portion. The nostrils are situated on the summit of the upper jaw, where it makes its curvature downwards; they penetrate obliquely in such a manner, that the upper semilunar edge, pressing upon the lower surface, forms a perfect valve, which may be shut at the will of the animal. The eyes are small, and supplied with a third eye-lid. The aperture of the ear is so minute, that it can only with difficulty be perceived. The paws offer no appearance of nails, but are somewhat verrucose or warty on their anterior margin; they are thick and fleshy, and neither from their form or size capable of supporting or assisting the animal out of the water; the tail is broad and crescent-shaped.

The skin is three quarters of an inch thick, and yields no oil. The skull is remarkable for the peculiar manner in which the anterior part of the upper jaw is bent downwards, almost at a right angle, so as to form a kind of beak. The lower jaw is truncated in such a way, as to correspond and become parallel with the elongated portion of the upper jaw. The vertebres are fifty-two in number, seven to the neck, eighteen to the back, and twenty-seven to the tail; ribs eighteen pair. The greatest peculiarity of this animal is, that the ventricles of the heart are widely detached from each other, being connected at their base only. Another singular circumstance is, that the inside of their cheeks is studded with strong projecting bristles.

The food of the Dugong appears to consist exclusively of the fuci and algæ, which it finds at the

bottom of the inlets of the sea. It browses on these vegetables in the same manner as a cow in a meadow. Its flesh resembles young beef, and is very delicate and palatable. Sir T. Raffles's words are —"It afforded much satisfaction on the table, as the flesh proved to be most excellent beef."

According to the natives of Sumatra, the Dugong is never found on land, or in fresh water, but generally in the shallows of the sea, when the water is only two or three fathoms deep. "During our short possession of Singapore," says Sir Thomas, (for six months,) "four of these animals were taken; but the greatest number is said to be caught during the opposite, or Northern Monsoon, where the sea is calmest, near the mouth of the Johore River. They are usually taken by spearing, (at which the natives are peculiarly dexterous,) during the night, when the animals give warning of their approach by the snuffling noise they make at the surface of the water. The first object is to secure and elevate the tail, when the animal becomes perfectly powerless, and at their disposal. They are seldom caught in Singapore above eight or nine feet in length; but how much larger they grow is not ascertained, as, when they exceed this size, their superior strength enables them to make their escape when attacked."

The Ikan Dugong is considered by the Malays as a royal fish, and the king is entitled to all that are taken. The flesh is highly prized, and considered by them as superior to that of the buffalo or cow. The affection of the mother for its young is

strongly marked; and the Malays make frequent allusion to this animal as an example of maternal affection. When they succeed in taking a young one, they feel themselves certain of the mother, who follows it, and allows herself to be speared and taken almost without resistance. The young have a short sharp cry, which they frequently repeat, and it is said that they shed tears. These tears are carefully preserved by the common people as a charm, the possession of which is supposed to secure the affections of those to whom they are attached, in the same manner as they attract the mother to her young; "an idea," remarks Sir Thomas, "at least poetic, and certainly more natural than the fable of the siren's song."*

There seems little doubt that there are many species of this curious animal inhabiting the Eastern Seas. Ed. Ruppel has given a description of the Dugong of the Red Sea. He considers it different from that of the Indian Seas, and has named it *Halicore tabernaculus*, in consequence of his historical researches having led him to the conclusion, that it was with the skin of this species that the Jews were ordered to veil their Tabernacle The Arabians esteem it for its flesh, teeth, and skin Ruppel observed it swimming among the coral banks on the coast of Abyssinia, near the Dalac Isles. The fishermen call it *Dauila*. They harpooned a female ten feet long, which our traveller dissected

* See Phil. Trans. for 1821

and described. He was informed by the Arabs that these Dugongs live in pairs or small families—that their voices are very feeble—that they feed on algæ—and that, in the months of February and March, bloody combats take place among the males. The females produce in November and December. The former sex attains the length of eighteen feet, the latter never equals these dimensions.*

The respectable voyager, Lequat, describes the Dugong as occurring in great numbers in the Isle of France in 1720. He states they were twenty feet long, and were captured with the greatest facility. They feed in troops like sheep, in three or four fathoms water, and did not attempt to escape when approached, so that a selection could be made, and they were shot at the end of the musket; or sometimes two or three of the party seized hold of one and forced it on shore. Three or four hundred were occasionally encountered together; and they were so little shy, that they allowed themselves to be handled at pleasure, and thus were the fattest selected. The natives here avoided, as we have noticed the Malays also do, a contest with the larger animals, on account of the great trouble which they occasioned, and also because they were not such good eating as the smaller ones.

It is the popular belief of the Malays, that two species frequent their coast; and M. F. Cuvier states, that there are considerable differences between the Malay

* See Encyc. Brit. art. Mammalia.

varieties and one which had been procured from the Philipines. It would appear that the animal is also known on the coast of New Holland, and there it is supposed, according to Quoy and Gaimard, to differ from those of the Indian Archipelago. It is occasionally also found in the Pacific.

We now proceed to

THE STELLERUS.

GENUS STELLERUS.—CUVIER.

Having a single and peculiar kind of tooth in each jaw; paws without any appearance of nails; skin remarkably thick and hard.

Stellerus Borealis, Desm. Less. Manatus Steller, Pen. Maskaia, or Sea-Cow of the Russians.

THERE is, perhaps, less known of this animal than of any of its congeners: scarcely any thing has been added to our information since the publication of Steller's account,* so that some have been led to entertain doubts of its existence. Such scepticism, however, is quite unwarrantable, after the patient labours of the celebrated naturalist of the Rurick. Something like a corroboration of Steller's account may, we think, be found in "Cook's Voyages." The celebrated navigator, when dwelling upon one of the Fox Islands, at no great distance from Behring's Straits, after mentioning the Seals and Walrus there encountered, adds—"We sometimes saw an animal with a head like a Seal's, which blew after

* See Nov. Comment. Acad. Petrop. t. ii. p. 294.

the manner of Whales. It was larger than a Seal; its colour was white, with some dark spots."* In all probability this was one of the *herbivorous* cete; and were this the case, it could scarcely be any other than the Stellerus.

The head of this species is small, oblong, and obtuse, and hangs down; the mouth, too, is small, and the lips appear double, that is to say, there are external and internal lips. When approximated, the void space between them is filled with a thick mass of strong bristles, which are white, and an inch and a half long, and as thick as pigeon's quills. These are to this creature what the whalebone is to the largest whales. But the masticating apparatus is still more singular, and quite peculiar. It does not consist of teeth, of which this animal has none, but of two large white horny substances which adhere, the one to the palate, and the other to the lower jaw. Even the insertion of these substances is peculiar; not being into the bones, but into the superincumbent soft parts. They are not bony but horny, composed of fibres agglutinated to each other like the horn of the rhinoceros.† The nostrils are at the end of the snout, and are lined with strong hair. There is no external ear, and the aperture is small. The eyes are small and deep set; the iris black, the ball livid; the tongue is pointed and small; the paws are about two feet

* Cook's Voyages, vol. ii p. 517, 4to edit.

† See Brandt, Mem. of Petersburgh Acad. 6th series, vol. ii.

long, destitute of nails, but terminating in sort of hoof, lined with bristles. The skin is dark, rugged, and knotty, like the bark of an old oak. In fact, according to Cuvier, the scarf skin is a kind of bark, composed of fibres or tubes closely packed, perpendicular to the skin. The fibres are implanted into the true skin by small bulbs, so that when this epidermis is pulled off, the skin is remarkably rough and almost shaggy; it has no hairs upon it, as may easily be supposed, for the fibres are nothing more than hairs soldered together, forming a kind of cuirass. In a word, the animal is completely clad in a substance similar to the hoof of cattle, or of the Elephant. This hide is an inch thick, and so hard as scarcely to be cut with an axe; and when cut, it appears in the inside like ebony. This skin is of singular use to the animal; during winter in protecting it against the ice, among which it often feeds, or the sharp-pointed rocks, against which it is often dashed by the furious storm; and during summer in guarding it against the rays of the never setting and scorching sun. This integument is so essential to its preservation, that Steller believes that many are killed by its accidental erosion. The tail is also black, ending in a stiff fin, composed of *laminæ* like whalebone, and fringed with fibres nearly nine inches long; it is crescent-shaped. It has two pectoral mammæ. The milk is thick and sweet, not unlike that of the ewe. The superior part of the body is very thick, gradually becoming slender at the tail; the abdomen is large and tumid

This animal grows to the length of twenty-eight feet. The following are the proportions of one somewhat less, measured by Steller. Length from nose to end of the tail, twenty-four and a half feet; from nose to setting on of the swimming paws, four feet four inches; circumference of head above the nostrils, two feet seven inches; at the neck, nearly seven feet; at shoulders, twelve; abdomen, twenty; width of tail, six and a half feet. The weight of a large one is 8000 pounds. The vertebræ are given, 6, 19, 35=in all to 60. The heart of this animal, as minutely described by Steller, is precisely the same in shape and construction as that of the Dugong already dwelt upon.

These animals were principally seen on the shores of Behring's Straits. They are also sometimes seen off Kamtschatka, and in the Bay of Awatscha.

They frequent the shallow parts of the shore, and the estuaries of the rivers, where they appear in great troops. The older surround the younger apparently in the way of protection. They are so tame as to suffer themselves to be handled; if roughly treated they remove towards the sea, but soon forget the injury and return. Sometimes they appear in families near one another, each of which consists of a male and female, one half grown, and a cub; the families often unite and form vast droves. They are most harmless and innocent in their manners, and most strongly attached to one another. When one is hooked, the whole herd will attempt its rescue; some will strive to overset the

boat, by going beneath it; others will fling themselves on the rope in order to break it, and others will endeavour to force the instrument from its hold. Their conjugal affection is most striking: a male, after using all its endeavours to relieve its mate which had been struck, following it to the water's edge, whence no blows could force it to depart. As long as she continued in the water he attended; and even for three days after her death, he was observed to remain in expectation of her return.

They are most voracious creatures, and feed with their head under water, quite inattentive to the boats, or any thing that passes around them; moving and swimming gently after one another, sometimes with a great portion of their back out of the water. Every now and then they elevate their nose to take breath, and make a noise like the snorting of horses.

They were taken at Behring's Island by a great hook fastened to a long rope, which was taken into a boat, and rowed amidst the herd. When the animal was struck, the loose end of the rope was conveyed to land, where it was seized by about thirty people, who with great difficulty drew it on shore. The poor creature made the strongest resistance, assisted by its faithful companions, and clinging to the rocks with the greatest pertinacity. In summer they are very fat, in winter quite lean.

The skin is used by the natives to cover their boats. The fat, which covers the whole body like

a thick blubber, was esteemed as good as "*May butter.*" The flesh of the old, when well boiled, resembled beef; and that of the young, veal. The crew preserved several casks of it, which was found of excellent service in their escape from their horrible confinement.

It is very generally supposed that there are other species of this genus besides the above, but concerning these nothing satisfactory has been determined.

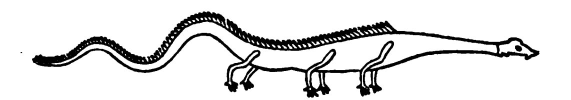
GROUP III.

"In mari multa latent."—Oppian.

We come now, in conclusion, to offer a few remarks on those two strange and extraordinary animals to which we shortly adverted in the Introduction. And, first, of

THE GREAT SEA-SERPENT.

Scoliophis Atlanticus? Linn. Soc. of Boston.



From Wern. Trans. vol. i.

That much fable and exaggeration have been mixed up with the history of the Great Sea-Serpent, cannot be doubted; still, however, the inquiry recurs, what portion of truth is involved amidst this error?

We turn, first, to an account of an animal which apparently belonged to this class, which was stranded in the Island of Stronsa, one of the Orkneys, in the year 1808, and which was first seen

entire, and measured by respectable individuals, and afterwards, when dead and broken in pieces by the violence of the waves, was again examined by many; portions of it being secured, such as the skull, and upper bones of the swimming paws, by Mr Laing, a neighbouring proprietor; and other portions, such as the vertebræ, &c., by being deposited and beautifully preserved in the Royal Museum of the University of Edinburgh, and in the Museum of the Royal College of Surgeons. An able paper on these latter fragments, and on the wreck of the animal, was read by the late Dr Barclay to the Wernerian Society, and will be found in vol. i. of its Transactions, to which we refer. We can allow space only for a very short abridgment of these documents, which, be it remembered, furnish an account of the animal principally after it had been mutilated; and hence we cannot wonder if the original accounts are both imperfect and contradictory. It measured fifty-six feet in length, and twelve in circumference. The head was small, not being a foot in length, from the snout to the first vertebre; the neck was slender, extending to the length of fifteen feet. All the accounts agree in assigning it blow-holes, though they differ as to their precise situation. On the shoulders something like a bristly mane commenced, which extended to near the extremity of the tail. It had three pairs of fins or paws connected with the body; the anterior were the largest, measuring more than four feet in length, and their extremities were some

what like toes, partially webbed. Probably the sketch is particularly defective respecting these. Dr Fleming, in his notice of this animal, suggests that these members were probably the remains of pectoral, ventral, and caudal fins.* The skin was smooth, without scales, and of a greyish colour; and the flesh appeared like coarse ill-coloured beef. The eye was of the size of the Seal's; the throat was too narrow to admit the hand. Though conveying probably a very imperfect representation of the animal, we have supplied above a wood-cut of the sketch which was taken at the time, and which, from the many affidavits proffered by most respectable individuals, as well as from other circumstances narrated, leaves no manner of doubt as to the existence of some such animal.

We shall next allude to the unvarnished account recently given, of a great animal which excited considerable astonishment and alarm among the Western Isles of Scotland. The following extract is taken from a letter of Mr Maclean, the parish minister of Eigg, dated 1809, to Dr Neill, the learned and worthy secretary of the Wernerian Society:—"I saw the animal of which you enquire in June 1808, on the coast of Coll. Rowing along that coast, I observed, at about the distance of half a mile, an object to windward, which gradually excited astonishment. At first view it appeared like a small rock; but, knowing that there was no rock in that situation, I fixed my

* Brit. An. p. 173.

eyes closely upon it. Then I saw it elevated considerably above the level of the sea, and, after a slow movement, distinctly perceived one of its eyes. Alarmed at the unusual appearance and magnitude of the animal, I steered so as to be at no great distance from the shore. When nearly in a line between it and the shore the monster, directing its head which still continued above water towards us, plunged violently under water. Certain that he was in chase of us, we plied hard to get ashore. Just as we leapt out on a rock, and had taken a station as high as we conveniently could, we saw it coming rapidly under water towards the stern of our boat. When within a few yards of it, finding the water shallow, it raised its monstrous head above water, and, by a winding course, got, with apparent difficulty, clear of the creek where our boat lay, and where the monster seemed in danger of being embayed. It continued to move off with its head above water, and with the wind for about half a mile, before we lost sight of it. Its head was somewhat broad, and of form somewhat oval; its neck somewhat smaller; its shoulders, if I can so term them, considerably broader, and thence it tapered towards the tail, which last it kept pretty low in the water, so that a view of it could not be taken so distinctly as I wished. It had no fins that I could perceive, and seemed to me to move progressively by undulation up and down. Its length I believed to be between seventy and eighty feet. When nearest to me it did not raise its head wholly above water, so

that the neck being under water, I could perceive no shining filaments thereon, if it had any. Its progressive motion under water I took to be very rapid. About the time I saw it, it was seen near the Isle of Canna. The crews of thirteen fishing boats, I am told, were so much terrified at its appearance, that they, in a body, fled from it to the nearest creek for safety. On the passage from Rum to Canna, the crew of one boat saw it coming towards them, with the wind, and its head high above water. One of the crew pronounced the head as large as a little boat, and its eye as large as a plate. The men were much terrified, but the monster offered them no molestation."* Dr Hibbert mentions that the Great Sea-Serpent has occasionally been recognized in the Shetland Seas; and specifies one which was seen off the Isle Stonness, Vaeley Island, and Dunvossness.†

We now turn to several instances of the appearance of the Sea-Serpent which have been witnessed off the coast of America; and we do so by referring first to the Report published by a Committee appointed by the Linnean Society of New-England, to collect all the evidence they could obtain on the subject. In the month of August 1817, it was generally reported that a very singular animal of prodigious size had been frequently seen in the Harbour of Gloucester, Cape Ann, about thirty miles from Boston. In general appearance it re-

* See Trans. of the Wernerian Soc. vol. i. 442.

† Shetland Islands, p. 565

sembled a Serpent, and was said to move with astonishing rapidity. It was visible only in calm and bright weather, and floated on the surface of the water, like a number of buoys following each other in a line.

In the report to which we have referred, the affidavits of a great many individuals of unblemished character are collected, which leaves no room to apprehend any thing like deceit. They do not agree in every minute particular, but in regard to its great length and Snake-like form, they are harmonious. The first person who makes deposition saw it for nearly half an hour, at the distance of 200 yards. At that distance he could not take in the two extremities with his glass. The second witness depones, that he observed a strange marine animal, which he believed to be a Serpent: it continued in sight for an hour and a half, and moved through the water with great rapidity, at the rate of a mile in two, or, at most, three minutes. On another occasion he saw it lying perfectly still, extended on the water, and displaying about fifty feet of its body. The third witness judged it to be between eighty and ninety feet in length, with the head formed somewhat like the Rattle-Snake, but nearly as large as that of the horse. At one time it showed about fifty distinct portions of its body. The fourth witness saw it open its mouth, which appeared like that of a Serpent. Another shot his gun loaded with ball at it, at the distance of thirty feet; when he found the monster immediately

turned round, as if intending to approach him, and passed very near the boat. The tenth deposition we shall give somewhat more fully. " On the 20th of June 1815, my boy informed me of an unusual appearance on the surface of the sea in the Cove. When I viewed it through the glass, I was in a moment satisfied that it was some aquatic animal, with the form, motions, and appearance of which I was not previously acquainted. It was about a quarter of a mile from the shore, and was moving with great rapidity to the southward; it appeared almost thirty feet in length. Presently it turned about, and then displayed a greater length, I suppose at least 100 feet. It then came towards me very rapidly, and lay entirely still on the surface of the water. His appearance then was like a string of buoys. I saw thirty or forty of these protuberances, or hunches, which were about the size of a barrel. The head appeared six or eight feet long, and tapered off to the size of a horse's head. He then appeared about 120 feet long; the body appeared of a uniform size; the colour deep brown. I could not discover any eye, mane, gills, or breathing holes; I did not see any fins or lips." We add, that there are many other depositions equally pointed as to the occurrence of this extraordinary creature, and several letters respecting it; one from the Honourable Lonson Nash, one of the committee of the Linnean Society, and himself an eye-witness, and another addressed by a clergyman to Judge Davis, the president of the society. General Hum-

phreys, by whom the affidavits were taken, transmitted a copy of them, and a detail of the whole circumstances, to the late Sir Joseph Banks, in whose library the documents are still preserved.

An animal of similar appearance was again seen in August 1819, off Nahant, Boston, which remained in the neighbourhood for some weeks. When first seen, it was stationary for four hours near the shore, and two hundred persons assembled to view it. Thirteen folds were counted, and the head, which was Serpent-shaped, was elevated two feet above the surface. Its eye was remarkably brilliant and glistening. The water was smooth, and the weather calm and serene. When it disappeared, its motion was undulatory, making curves perpendicular to the surface of the water, and giving the appearance of a long moving string of corks. The last notice we have seen of this American animal bears date July 1833. The Boston and New-York papers of that date state, that the Sea-Serpent had again appeared off Nahant. "It was first seen on Saturday afternoon, passing between Egg Rock and the Promontory, winding his way into Lynn Harbour, and again on Sunday morning, heading for South Shores. He was seen by forty or fifty ladies and gentlemen, who insist that they could not have been deceived."

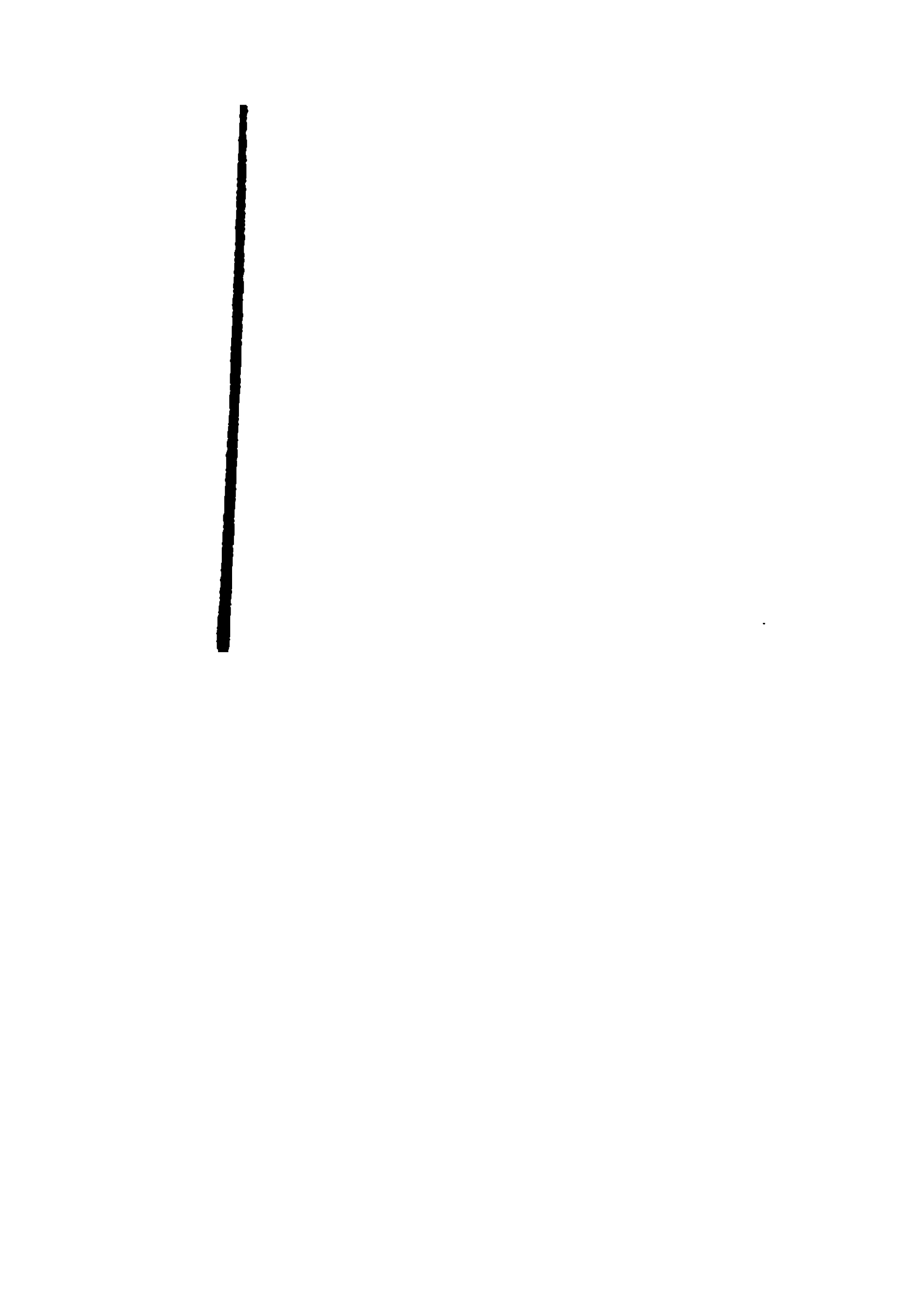
In connection with the animal thus seen in America, we must not omit the authentic account of a previously undescribed species of Serpent, which has a striking resemblance in some of its features

to the apocryphal animal on which we are now dwelling. The Boston Society of Natural History has the merit of having first brought this Serpent under the notice of Zoologists, and the committee who described it unhesitatingly regarded it as a specimen of one of the young of the Great Sea-Serpent. It was seen and killed in September 1817, near Sandy Bay, between a salt lake and the sea, at no great distance from the shore, and was speedily brought to Boston for the examination of the Society. It was a yard long all but half an inch. The contour of the back exhibited its most singular feature, for here was found a waving line, produced by a series of permanent risings, which commenced near the head, and extended, almost without interruption, to the tail, their total number being forty. The body could be bent with the greatest facility in the vertical direction, especially at the undulations, but not without great difficulty latterly. The Society applied to this animal the name of *Scoliophis Atlanticus*, of which, at the conclusion of this chapter, we subjoin a representation. M. de Blainville, in analyzing the various documents which have been published concerning this Serpent, remarks—" That a new species of Serpent has been discovered in America, which is really very singular, especially as it regards its vertebral column, ribs, and mode of progression, appears certain; but that this small Serpent is precisely of the same species as the great marine animal which has appeared off the coast, and whose

existence we can scarcely deny, is very doubtful."*

But long before the Great Sea-Serpent was ever suspected of being a visitor of the British Isles, or of the New World, it was regarded as a well known member of the Fauna of Scandinavia. In this connection, we will not omit the unquestionably exaggerated statements of the honest missionary, Hans Egede, concerning what he tells us he himself witnessed off the coast of Greenland in the year 1734. After speaking of the Mermaid, &c., he adds— "None of these sea monsters have been seen by us, nor by any of our time that I could hear, save that most dreadful monster which showed itself on the surface of the water off our colony, in 64° north latitude. This monster was of so huge a size, that, coming out of the water, its head reached as high as the main mast; its body was as bulky as the ship, and three or four times as long. It had a long pointed snout, and spouted like a whale fish; it had great broad paws; the body seemed covered with shell work, and the skin was very rugged and uneven. The under part of its body was shaped like an enormous huge Serpent; and when it dived again under water, it plunged backwards into the sea, and so raised its tail aloft, which seemed a whole ship's length distant from the bulkiest part of its body."† In the new History of Greenland, our author again speaks of this animal, and informs us that Mr Bing,

* Journal de Physique, t. lxxxvi. p. 297.
† Nat. Hist of Greenland, p. 86.





SEA SERPENT

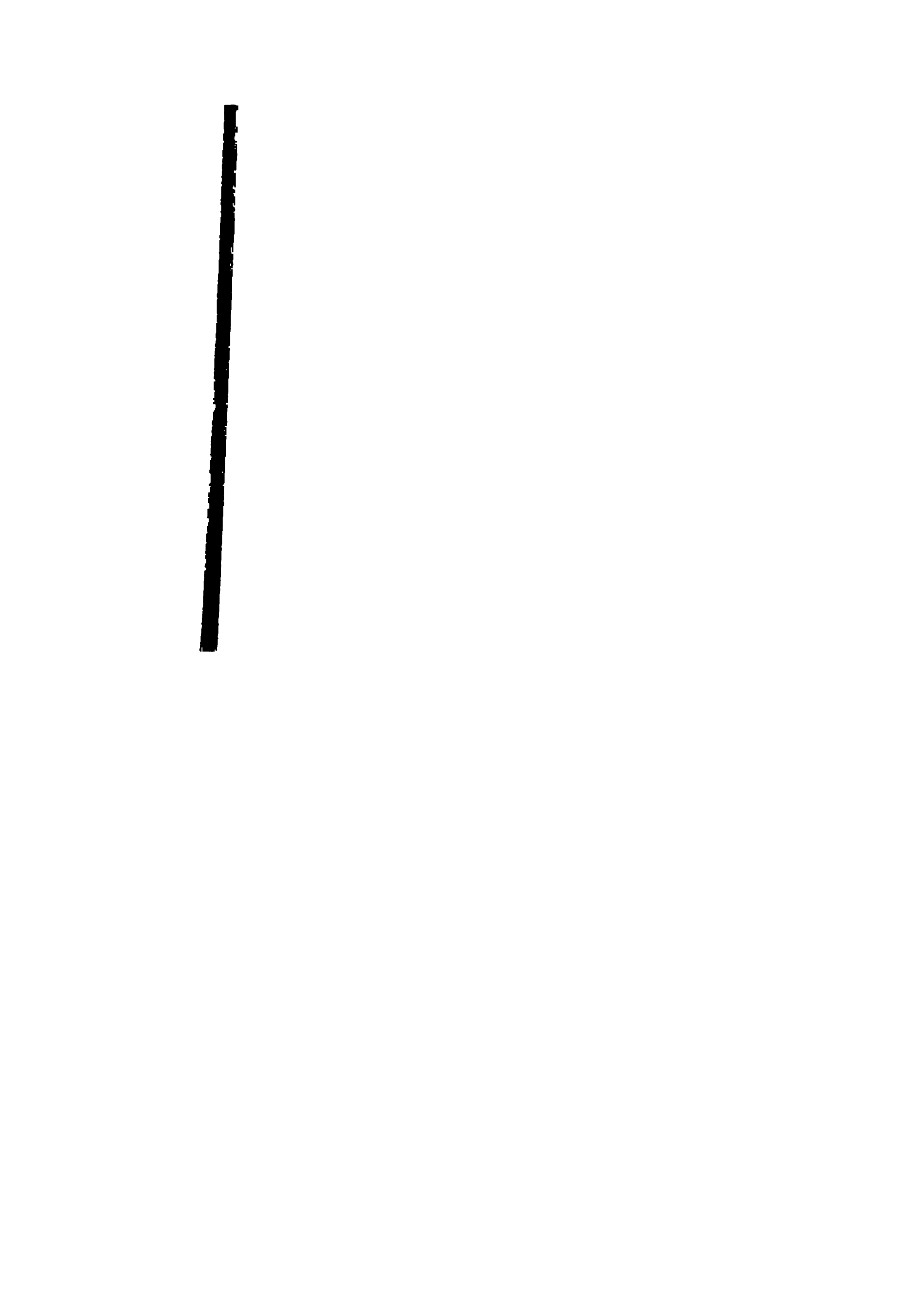
another of the missionaries, took a drawing of it. This we have copied on our plate.—(See Plate XXVIII.)

Finally, we subjoin the accounts, older and more recent, given of this animal in what may be called its native retreats. We shall begin with a short abridgment of the information supplied in Pontoppidon's Natural History of Norway:—"Our coast," says the learned bishop, "is the only place in Europe visited by this terrible creature. This makes many persons who are enemies to credulity entertain doubts about it. I have questioned its existence myself, till that suspicion was removed by full and sufficient evidence from creditable and experienced fishermen and sailors, of which there are hundreds who can testify they have annually seen them. All these persons agree very well in the general description. In all my inquiries, I have scarcely spoken to any intelligent person who was not able to give strong assurances of the existence of this fish; and some of our traders think it a very strange question when they are seriously asked whether there be such a creature; they think it as ridiculous, as if the question were put to them whether there be such fish as Cod or Eel." After this, a long letter is supplied from Captain L. de Ferry, who was in his boat, with a crew of eight men, when they saw a Sea-Serpent, which he fired at and wounded. His description very much agrees with that already given and every particular is authenticated by the affidavits of two of his crew. We are also informed that

Governor Berestrap states, that he saw a similar animal a few years before, and drew a sketch of it. Mr Hans Strom, a clergyman, also caused a sketch to be made of one which came under his inspection, and other eye-witnesses are named. The bishop concludes, "I might mention, to the same purpose, many more persons of equal credit and reputation." But we must bring these statements of Pontoppidon to a close with one other short quotation. "Though it is difficult to ascertain its exact dimensions, yet all who have seen it are unanimous in affirming that it appears to be about 600 feet long; that it lies in the water in many folds, and there appears like so many hogsheads floating in a line, at a considerable distance from each other."*—(Plate XXIX. is a copy of Pontoppidon's representation.)

Again, Sir A. de Capell Brooke makes allusion to this animal in his "Travels in Norway." He states that he did not witness it himself, but that the fishermen of Sejerstad stated it was seen in 1818 in the Folden *fiord*. In July 1819, it made its appearance off Otersun in Norway, and Captain Schilderup stated to Sir Arthur that it was seen daily during the whole month, and continued while the warm weather lasted, as if dozing in the sun-beams. When Captain S. first saw it, he was in a boat at the distance of about 200 yards, and supposes its length to have been about 600 feet. The Bishop of Nordland had seen two of them about eight miles from

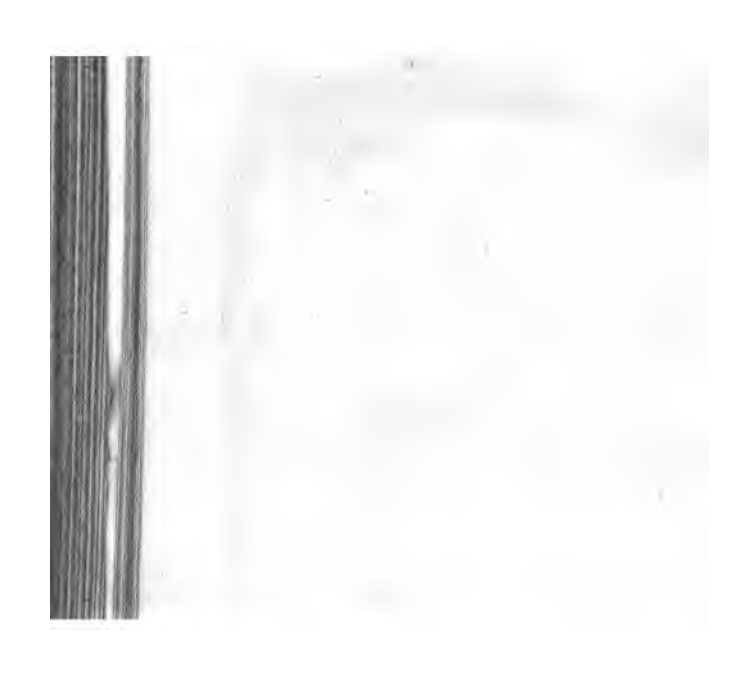
* Loc. cit. ii. 195.





THE GREAT SEA SERPENT

(according to Pontoppidan.)

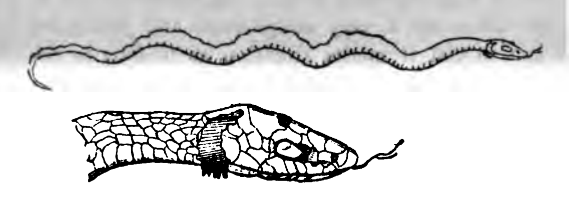


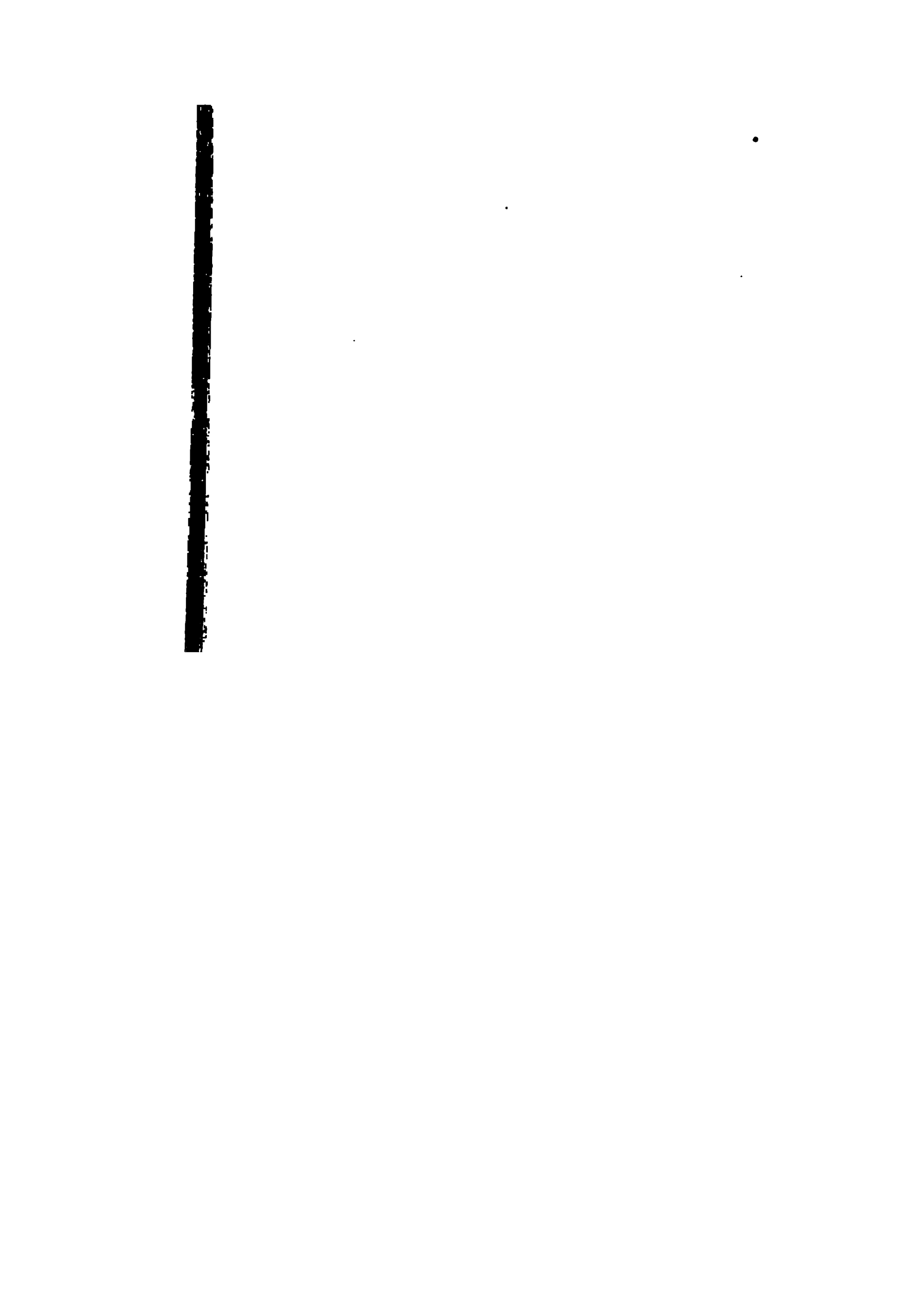
Drontheim; he was not far from them, and considered the largest to be about 100 feet. Again, in 1822, one of these creatures, reported to be as bulky as a large ox, and about a fourth of an English mile in length, made its appearance off the island of Soröe, near Tinmask, and was seen by many of the islanders.

The most recent account of this monster we have noticed, appeared in the public newspapers of Drontheim, in the autumn of 1837, and we confess we cannot regard it as a sheer fabrication:—"The Adis of this city contains an account from Tozen of the end of August, which it says was communicated to the editor by a very enlightened and principled man, so that it merits attention, as tending to remove the doubt respecting the existence of the Sea-Serpent. The account says, that since the beginning of the dog-days, the Serpent has been seen at various parts of the coast of that district. One of them seems to have remained constantly during this summer near Storfosen, at the Kergvang Islands. Several fishermen have been so dreadfully alarmed at the sudden appearance of the Serpent so near their boats, that they did not know in what direction to escape. The Serpent did not attack, but followed the boat for some distance, and the men in their haste so over-exerted themselves, that two were confined to their beds. Very credible persons affirm that the length of the Sea-Serpent may be taken at 600 or 800 ells, or perhaps more, for when these people were near its head, they could not

discern its tail. Its greatest thickness is close to the head. These observations were made very clearly within these few days, amongst others, by a credible, sensible man, who, with his two sons, was on our island where they landed, and where the Serpent, after following their boat, swam slowly by."

With these extracts, and without farther comment, we close our account of the Great Sea-Serpent, only remarking, that till favouring circumstances bring the animal under the examination of Naturalists, the satisfaction, which is desiderated respecting it, is scarcely to be expected.







THE KRAKEN SUPPOSED A SEPIA OR CUTTLE FISH.

THE KRAKEN.—PONTOPPIDON.

Kraken, Kraxen, Krabben, and Horven, Ancker-Trold, Olaus, Wormius, Pontoppidon.—Scandinavian Writers.

WE now proceed to make a few remarks upon the other sea monster to which we alluded in the Introduction of this volume, viz. the Kraken, which, of all other reputed animals, is perhaps the most involved in mystery and obscurity. Though regarded by Olaus, Wormius, and other early writers, as a species of Whale, there seems to be no good ground for this opinion. The statements of the Ancients concerning this animal are so exaggerated, that we will not try the patience of our readers by copying them, but as an example merely we quote that of Pliny :—"In Gaditano oceana arbor est, in tantum vastis dispensa ramis, ut ex ea causa fritum nunquam intrasse credatur."* The belief in this monster is, however, universal among the sailors and fishermen of the Norwegian coast, and it has been alluded to by all the Scandinavian writers from the

* Lib. ix. cap. 4.

earliest period down to the present day. We may best, perhaps, give a general idea of this famous animal, by abridging the account supplied by the learned Pontoppidon, who remarks it is incontestably the largest sea monster in the world :—" Our fishermen usually affirm," says he, " that when they row out several miles to sea, particularly in hot summer days, they are informed, by various circumstances, that the Kraken is at the bottom of the sea. Sometimes twenty boats get together over him ; and when, from well known indications, they perceive it is rising, they get away as fast as they can. When they find themselves out of danger, they lie upon their oars, and in a few minutes they see the monster come to the surface. He there shows himself sufficiently, though only a small part of his body appears. Its back, which appears to be a mile and a half in circumference, looks at first like a number of small islands, surrounded with something which floats like sea-weeds; here and there a larger rising is observed like sandy banks; at last several bright points or horns appear, which grow thicker the higher they rise, and sometimes they stand up as high, and as large, as the masts of middle-sized vessels. It seems these are the creature's arms, and it is said that if they were to lay hold of the largest man-of-war, they would pull it down to the bottom. After the monster has been a short time on the surface of the water, he begins slowly to sink again; and then the danger is as great as before, because the motion of the sinking

causes such a swell, and such an eddy and whirlpool, that he carries every thing down with it."*

It is a favourite notion of Pontoppidon, that from the appearance of the Kraken originate those traditions of floating islands being so frequently observed in the North Sea. Thus Debes, in his Feroa Reserata, alludes to certain islands which suddenly appeared, and as suddenly vanished. Similar accounts may be found in Harpelius and Torfæus. These islands are looked upon by the common people as the habitation of evil spirits, but are more probably occasioned by the appearance of this great sea animal. "We ought not," says Pontoppidon, "to charge the evil spirit without a cause. I think the making and unmaking of these floating islands is nothing else but the Kraken, which some sea-faring people call Soe-trolden, *i. e.* sea mischief. What confirms me in this opinion is the following occurrence, quoted by the worthy Swedish physician, Urban Hierne, from Baron Grippenheim. 'Among the rocks about Stockholm there is sometimes seen a certain tract of land, which at other times disappears, and is again seen in another place. Buræus has placed this as an island in his map. The peasants say it is not always seen, and that it lies in the open sea, but I could not find it. On Sunday I saw something like three points of land in the sea, which surprised me. Upon this I went to enquire of a peasant, but on our return we could see nothing

* Pontoppidon's Nat. Hist. of Norway, vol. ii. p. 211.

of it. Now, says the Bishop, who is it that cannot discover that this visible and invisible island is nothing else than the Kraken improperly placed in the map by Buræus? Probably the creature keeps himself always about that spot, and often rises about the rocks and cliffs.'"

At first view this account can scarcely be regarded in any other light than that of mere fable, and yet probably without much difficulty this extraordinary Kraken may be identified with certain species of Sepia, or Cuttle-fish, which have been described in the Annals of Science. Mr Pennant, in his description of the Eight Armed Cuttle-fish, mentions—"That in the Indian Seas this species has been found of such a size as to measure twelve feet in breadth across the central part, while each arm was fifty-four feet in length, thus making it extend from point to point about 120 feet. He farther states that the natives of the Indian Isles, when sailing in their canoes, always take care to be provided with hatchets, in order immediately to cut off the arms of such of these animals as happen to fling them over the sides of the canoe, lest they should pull it under water and sink it." The opinion of Dr Shaw is equally decided regarding the occurrence of this animal.—"The existence of some enormously large species of the Cuttle-fish tribe in the Indian Northern Seas can hardly be doubted; and though some accounts may have been much exaggerated, yet there is sufficient cause for believing that such species may very far surpass all that are generally observed

about the coasts of European Seas. A modern Naturalist chooses to distinguish this tremendous species by the title of the Colossal Cuttle-fish, and seems amply disposed to believe all that has been related of its ravages. A Northern navigator, of the name of Dens, is said, some years ago, to have lost three of his men in the African Seas by a monster of this kind, which unexpectedly made its appearance while these men were employed, during a calm, in raking the sides of the vessel. The Colossal-fish seized three men in its arms, and drew them under water, in spite of every effort to preserve them: the thickness of one of the arms, which was cut off in the contest, was that of a mizzen-mast, and the suckers of the size of pot-lids."*

But the most zealous author who treats of this animal is undoubtedly Denys Montfort. In his work on the Natural History of the *Mollusca* there are many instances mentioned of its occurrence in various parts of the world, the particulars of which he was so fortunate as to procure from those who were eye-witnesses of what he relates. He gives in detail the circumstances above alluded to by Dr Shaw from the account as supplied by Dens himself; and, among other instances, he mentions that at St Malo, in the chapel of St Thomas, there is an ex voto, or picture deposited there by the crew of a vessel, in remembrance of their wonderful preservation during

* Shaw's Lectures, vol. ii. p. 137.

August 5, 1786, off the coast of Scotland, about fifteen leagues to the eastward, in lat. 56° 16′. In appearance it resembled three low islands, or sand-banks, of a greyish colour, within less than a mile's distance from the ship; and it appeared to extend about three miles from one extremity to the other. It remained in sight about fifty minutes, and upon the springing up of a breeze it gradually sunk under the water. The illusion or exaggeration in this instance must here be very great, and would almost lead us to agree with the remark made in the Society's Transactions, that the account is perfectly consistent with the idea of this being nothing more than a fog-bank, of which the appearance is familiar to mariners.*

A similar incident is mentioned by Dr Hibbert as having occurred in Shetland. "A few years since," he states, "an affidavit was taken by a justice of the peace in Shetland relative to this monster, which was seen at a distance from the shore off the Island of Burra. It appeared, according to the declaration of these witnesses, like the hull of a large ship, but, on approaching it nearer, they saw it was infinitely larger, and resembled the back of a monster." It is also said that part of the remains of a dead Kraken were found about seventy years ago, driven to the mouth of a large cave in the Island of Meikle Roe. We learn, likewise, from Pontoppidon, that Mr Friis, minister of Bodeon in

* Edin. Phil. Trans. vol. ii. 16.

Nordland, records that one of these creatures was stranded among the rocks in the year 1680: the carcass was a long time in decaying; it filled up a great part of the Narrow Channel, and made it almost impassible on account of its intolerable stench.

We must now terminate our account of this extraordinary animal, and shall do so in the words of a distinguished Naturalist, who, with great ability, has illustrated the subject, and whose able paper we recommend to the attention of our readers.* "The different authorities we have quoted are, we trust, sufficient to establish the existence of an enormous inhabitant of the deep, (the Cuttle-fish,) possessed of characters which, in a remarkable degree, distinguish it from every other creature with which we are familiar; and the agreement which may be observed in its descriptions, when compared with those of the celebrated Kraken, is sufficiently obvious to warrant the inference which we are now prepared to draw—That the great Norwegian animal thus named is to be considered not as a wild and groundless chimera, but as either identical with, or nearly allied to, this colossal cuttle-fish. It must be confessed that many of the accounts to which we have referred, if considered singly, are much too vague and indefinite to form the foundation of any opinion; but it is the general import and tendency of the whole combined which should be considered. In this view, it would be

* Blackwood's Mag. vol. ii. and iii.

contrary to an enlightened philosophy to reject, as spurious, the history of an animal, the existence of which is rendered so probable, by evidence deduced from the prevailing belief of different tribes of mankind, whose opinions, it is evident, could not have been influenced or affected by the tradition of each other, but must have resulted from the occasional appearances of the monster itself in different quarters of the globe."



THE END.

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